CULTURAL DIMENSIONS AND ONLINE LEARNING PREFERENCES OF ASIAN STUDENTS AT OKLAHOMA STATE UNIVERSITY IN THE UNITED STATES

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in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
May, 2009

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AT OKLAHOMA STATE UNIVERSITY IN THE

UNITED STATES

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ACKNOWLEDGMENTS

I sincerely thank my advisor, Dr. Lynna Ausburn for her patience, excellent guidance, and encouragement. Her help in the detailed line by line corrections to my dissertation will always be appreciated.

I also thank Dr. Gary Conti for his great help in developing the survey instrument used for my research. His great insight, knowledge of statistical analysis techniques, and his expert use of SPSS were invaluable to the completion of this work. His help and encouragement were so wonderful.

Dr. Mary Jo Self was extremely helpful to me in using proper APA style. She also was very helpful providing philosophical framework for this research.

Dr. Belinda McCharen provided detailed reference checking and comments. Thanks so much to her.

I thank my husband, Steven, who was very patient and encouraged me during the whole journey of my doctoral studies. I also thank my daughter who Jenny helped me by printing my reference papers many times.

I would like to thank my church members, especially Elder Byun Kyung Mook and Sun Jea Kim. I also thank to my good friend Kyong Ae Park. Their prayers and spiritual support are much appreciated.

This dissertation is dedicated to my father and mother who are no longer on this earth. My parents were very dedicated to my education. My achievement is their achievement. Finally, I would like to thank all my friends who have inspired and supported me in this journey. Thanks to everybody.

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CHAPTER I

INTRODUCTION

Introduction

Online learning reaches many diverse learners in our global age. In universities across the United States and Europe, most online learning courses are developed based on Western philosophy, epistemology, values, and culture. In these countries, students who come from Eastern cultures or non-Western minority groups often encounter difficulties when they take online courses. The literature reports that the most critical issues for these groups in online learning in U. S. universities are basic cultural differences, dissonant instructional design, unfamiliar user interfaces, radically different learning and teaching styles, and radically different educational systems in the U.S. compared to what the learner has experienced in his or her home country or culture. There are also English proficiency or language discourse problems, and problems with unfamiliar technology (Allinson & Hayes, 2000; Auyeung & Sands, 1996; Chen, 2007; De Vita, 2001; Edmundson, 2004; Henderson, 1996, 2007; Jaju, Kwak, & Zinkhan, 2002;McCarty, 2007; Marcus, 2006; Marcus & Gould 2000; Marinetti & Dunn, 2002; McLoughlin, 2000; Yamazaki, 2005). Some research has proposed that although cultural considerations are important elements in online learning courses, many instructional designers and instructors are not aware of culturally-based problems experienced by their students from Eastern countries, and that even when they have awareness, still they have a limited knowledge of the learning and educational cultures in Eastern countries and so

lack practical knowledge of specific problems and remedies (Rogers, Graham, & Mayes, 2007).

To prevent the failure of online courses, instructional designers and instructors need to take into account learners' cultural backgrounds, needs, value systems, and philosophies. To develop culturally sensitive and competent online learning courses, research is needed that focuses on how cultural dimensions influence students' learning preferences in an online learning environment. This need provided the impetus for this study. To verify Asian students' online learning preferences, Henderson's (1996) multiple cultural model was used in the study. To identify the cultural dimensions and learning preferences, Hofstede's (2001) and Hall's (1976, 1984, 1989) cultural dimension theories were used.

The goal of this study was to identify Asian students' online learning preferences in the hope that identifying online learning preference would be beneficial to understanding ways to improve Asian students' performance in online learning environments. It was the premise of the study that knowledge of such preferences would yield valuable information to facilitate Asians students' learning in online learning classes, provide better ideas for organizing online learning content and activities, and promotes better learning outcomes for Asian students in U. S. higher education environments.

Issues

As critical issues of cultural dissimilarities and online learning effectiveness, many researchers (Bently, Tinney, & Chia, 2005; Edmundson, 2007; Henderson, 1996; Lim & Jusri, 2003; Liu, 2007a; Marcus, 2006; Marcus & Gould, 2000; Marinetti &

Dunn, 2002; McLoughlin, 2000; McLoughlin & Oliver, 1999; Nisbett, Peng, Choi, & Norenzayan, 2001; Tu, 2001; Wilson, 2001) have reported the following: 1) inappropriate instructional design for diverse learners (Catterick, 2007; Collis, 1999; Henderson, 1996, 2007; McLoughlin & Oliver, 1999; Rogers, Graham, & Mayes, 2007); 2) incompatible user interfaces for diverse learners (Evers, 1998; Evers & Day, 1997; Marcus, 2006; Marcus & Gould, 2000; Marinetti & Dunn, 2002); 3) lack of recognition by instructors of different learning and cognitive styles in information-seeking behaviors (Allinson & Hayes, 2000; De Vita, 2001; Ford, Wilson, Foster, Ellis, & Spink, 2002; Kim, 2001; Manochehri & Young, 2006; Savvas, El-Kot, & Sadler-Smith, 2001); 4) poor recognition by instructional designers of language barriers in online learning environments (Bates, 2001; Pincas, 2001); and 5) lack of assessment of technology issues between developed and underdeveloped countries by online learning course designers (Hancock, Barnhart, Cox, & Faldasz, 2005; Horton 2000).

Instructional Design Issues

McLoughlin and Oliver (1999) argued that one of the limitations of current instructional design models is lack of cultural contextualization. Most of current online learning courses are not fully contextualized for the student's learning experience, but rather most of them are the products of particular cultures. Reeves and Reeves (1997) asserted the importance of cultural sensitivity for Web-based instruction. Henderson (1996) argued for multicultural understanding of minority and marginalized groups for equitable learning outcomes. Catterick (2007) asserted that the philosophical foundations of online learning are based on Western education paradigms such as cognitive and

constructivist approaches that are not supported in Eastern cultures and that for non-Western learners, these paradigms need to shift toward culturally inclusive learning and instruction. Rogers, Graham, and Mayes (2007) also recommended understanding of general cultural and social expectations of target learners to develop better instructional design. McLoughlin (2000) pointed out that to foster equity of participants of marginalized groups, instructional designers and instructors need to be aware of learners' needs and preferences, provide multiple communication channels, offer multiple perspectives, present scaffolding and support, and provide flexible goals. The common theme for all these researchers was knowledge of the cultural diversity of students and the application of this knowledge in designing culturally sensitive and inclusive instructions.

User Interface issues

One of critical issues of online learning design is the graphical user interface. The graphical user interface includes images, icons, symbols, numbers, colors, and pictures included in the user interaction with an online course. Images are the building blocks of an online course interface and represent the visual language of a culture. Images convey meanings in websites, but many examples from research literature indicate that they convey different meanings according to the culture of the user. For example, an owl icon symbolizes wisdom in the United States, but shrewdness in the Taiwanese's culture, and bad luck for Eastern Indians. Another example is that the image or picture of a dragon is auspicious in Chinese culture, but to other cultures it represents monsters or evil (Lim & Jusri, 2003). Symbols, icons, and other graphics are other important elements when developing online learning courses for a global audience. Lang (2007) recommended the

following rules for symbols and icons to avoid cultural problems: 1) avoid graphics depicting human body elements and body language; 2) avoid graphics depicting humor and slang; 3) avoid graphics depicting ethnic, racial, political, and religious environments; 4) avoid graphics depicting physical environments; 4) avoid graphics with gender-specific elements; and 5) avoid graphics depicting images of animals.

Color is another graphic element that has a variety of meanings across cultures. For example, in the East, white is the color of funerals, while in the West white is the color of weddings. Thus, if your learners are from Asian cultures, it is best to avoid white colors for sending happy messages (Lim & Jusri, 2003).

Text directionality is also a graphic navigational element that influences the user interface. For example, for Western readers, the text is written from top to bottom, left to right. However, in the Middle East, the scripts are written horizontally from right to left, with lines moving from top to bottom (Lim & Jusri, 2003). For a user interface, the designer should consider characters, numerals, special characters, diacritical marks, date and time formats, numeric and currency formats, units of measure, telephone numbers and addresses. For global audiences the design of a user interface should accommodate users' cultural differences in all these elements (Evers & Day, 1997; Marcus & Gould, 2000). Evers and Day (1997) emphasized the role of culture in user interface acceptance. They claimed that there were significant differences between user acceptances of interfaces for different cultural groups. For example, in their study they found distinct differences among Chinese, Indonesian, and Australian users. The Chinese users tended to prefer usefulness rather than ease of use or satisfaction in user interfaces. The Indonesian tended to prefer ease of use over usefulness. The Australian preferred

satisfaction over usefulness or usability in user interfaces. According to Hedberg and Brown (2002) "user interface guidelines have been developed predominantly in English speaking countries, but aspects related to culture (e.g. local metaphors, symbols, color and flow) are not universal and have received little or no attention" (p. 24). They strongly advocated the development of culturally sensitive and linguistically adapted user interfaces for diverse users.

Marcus and Gould (2000) supported cultural sensitivity and argued that instructional designers should take into account cultural preferences and value orientations that are more prevalent in Asia, Latin America, the Islamic world and Africa rather than a continuous focus on American or European mainstream cultures when designing user interfaces. Marcus (2006) stated that information visualization and user interfaces must take culture into account in the design of metaphors, mental models, navigation, interaction, and appearance in user interfaces.

Different Learning and/or Cognitive Styles

Learning style refers to individual, natural, and preferred ways of human information processing. Cognitive style similarly refers to a distinctive and habitual manner of organizing and processing information (Barmeyer, 2004; Sadler-Smith, 1996b). Ausburn and Ausburn (1978) argued that cognitive styles are closely related to educational technology and instructional design issues. They asserted that taking into consideration cognitive differences can lead to improvements in both individual instructional and individualized instruction, and it also provides appropriate media and

technique selection, bridges the gap between learner and task performance, and provides specific guidelines for instructional design.

Allinson and Hayes (2000) asserted that there are different cognitive styles existing between Easterners and Westerners. They experimented with a total of 394 managers from six nations (Britain, India, Jordan, Nepal, Russia, and Singapore) and 360 management students from five nations (Australia, France, Germany, Britain, and Hong Kong) using the Cognitive Style Index (CSI) that they had previously developed (Allinson & Hayes, 1996). The results were that British subjects were the most intuitive groups, and the subjects of the developing world and Arab countries categories were the most analytic groups. While these results were unexpected, this research showed that there were distinct cross-national differences in cognitive styles and that these may be fundamental obstacles to productive working relationships between managers of different national cultures. The Allinson and Hayes (2000) study suggests that in learning and teaching context, understanding cultural dimensions and cognitive styles may be beneficial to facilitating effective interaction between the instructor and students.

Savvas, El-Kot, and Sadler-Smith (2001) compared the cognitive styles of Egypt (45 participants), Greece (48 participants), and the United Kingdom (UK) (52 participants). The sample was drawn from business and management undergraduate students. There were no statistically significant differences in cognitive styles. However, when they examined post-graduate students from Egypt (20 participants), Hong Kong (47 participants), and the UK (76 participants), they observed statistically significant differences between these samples. Savvas, El-Kot, and Sadler-Smith (2001) asserted

that there are different national cultures, and that these cultures are closely related to cognitive styles.

Ford, Wilson, Foster, Ellis, and Spink (2002) also examined the relationship between cognitive styles and information-seeking behaviors using 111 postdoctoral researchers. The instruments used were Watkin's field-dependent and independent test, Riding's cognitive styles analysis, and Ford's process questionnaire from Pask's holist and serialist question items. They found that field-independent researchers were more analytic and active than field-dependent counterparts. Field-dependents engaged more in exploratory behavior and showed unexpected behaviors in information seeking. Field-independent individuals showed more clear and focused thinking, whereas field-dependents individual had a fuzzier and less differential view of problems.

Understanding the effects of cognitive style in information-seeking behavior is an important issue in database, hypertext, and visual environments associated with online learning and Web-based teaching. Acknowledging the difference of information-seeking behaviors related to cultural cognitive style differences may be important to the effort of designers who seek to foster effective online learning in a multi-cultural environment.

Kim (2001) researched information-seeking behaviors on the World Wide Web. In this study, 48 undergraduate students were participants. Search performance was measured in terms of time required, the number of nodes visited, and relevance of information items sought. Kim found that field-dependent students took longer to find information than field-independent students. They visited many nodes, used "Home" more frequently, and tended to prefer linear modes using embedded links compared to field-independent learners.

Auyeung and Sands (1996) conducted a cross-cultural study of the learning styles of accounting students using Kolb's learning style inventory. Their test subjects were 172 Hong Kong students, 157 Taiwanese students, and 303 Australian students. The findings indicated that students from a collectivism culture (Hong Kong and Taiwan) preferred more abstract and reflective learning styles as opposed to styles that were concrete and active. By contrast, students from an individualism culture (Australian) preferred more concrete and active learning styles. Hong Kong and Taiwan students exhibited assimilator learning styles, whereas Australian students used an accommodator style.

Jaju, Kwak, and Zinkhan (2002) examined cross-cultural differences in the learning styles of students using Hofstede's cross-cultural framework combined with Kolb's experiential learning model. Their test population was 623 undergraduate business students from three different countries: US, India, and Korea. The findings indicated that students from the US preferred reflective observation and concrete experience while learning, while students from India preferred active experimentation and abstract conceptualization. In contrast, students from Korea preferred reflective observation and abstract conceptualization. US students represented a divergent style, Indian students showed a convergent style, and Korean students revealed an assimilative style. This empirical research showed that cultural differences can influence learning styles.

Several examples from cross-cultural research illustrate how learning styles of students are influenced by their respective cultures. The United States culture tends to be a low power distance culture. In the United States, the instructors treat students as equals and simply provide the learning materials. The role of instructor is facilitator and guide (Hofstede, 2001; Jaju, Kwak, & Zinkhan, 2002). Furthermore, the United States is a

culturally individualistic society where students tend to adapt and use a "learn-by-myself" approach (Hofstede & Hofstede, 2005; Jaju, Kwak, & Zinkhan, 2002). In contrast, culture in India has high power distance and low uncertainty index. Instructors provide one thing at a time and give specific knowledge in detail, using facts. Korean culture has low masculinity and high individualism scores, and Korean students prefer stability and continuity. They tend to value order and are inclined towards the flow relationships (Hofstede & Hofstede, 2005; Jaju, Kwak, & Zinkhan, 2002). These examples illustrate the relationships between culture and learning styles.

Language issues

Language is an important element of cultural identification. It represents a different way of thinking as well as a different way of speaking. Culture influences the structure of language as well as the usage of language, and language represents manifestation of culture, cultural values and worldview (Gunawardena, Wilson, & Nolla, 2003). Because language is closely related to culture, Asian students who are engaged in online learning discussion can encounter some difficulties in Western-designed environments that are not culturally sensitive.

Language can be a critical issue for Asian students in US educational settings, including online environments. English is the most widely used and dominant language on the Internet. However, many global audiences use English as a second rather than a primary language. Pincas (2001) asserted that international students encounter language problems in online learning courses. However, this appears to be not just simple language difficulties, but rather discourse problems. For example, Bates (2001) argued that "the

problem is not just English, the content of online course examples are not contextualized from one culture to another culture, and writing styles and the use of idioms are not transferable from Western to another culture" (p. 129).

Technology issues

Technology issues, such as broadband Internet access, technology infrastructure between developed and underdeveloped countries and lack of bandwidth have also been discussed as critical issues in online learning courses. Not every global learner's home setting has the same technical infrastructure as the United States. Not all learners have broadband Internet connections when they take online courses, so online learning courses need to be designed with the target country's technology in mind. Learners in the developing countries often have difficulty when downloading very large files including pictures, sounds, and video clips (Hancock, Barnhart, Cox, & Faldasz, 2005; Horton 2000), yet these are often included in online courses developed in the United States.

Problem Statement

Cultural consideration is important in any teaching and learning, and the available literature clearly indicates the presence of cultural issues in designing online courses. As globalization and multiculturalism increase, designing culturally sensitive and appropriate online learning content is critical and challenging for global audiences. However, numerous researchers have claimed that although cultural considerations are important factors for student learning, many online learning courses are culturally insensitive and are designed without any awareness of cultural differences among

students (Catterick, 2007; Collis, 1999; Gunawardena, Wilson, & Nolla, 2003; Henderson, 1996; Hofstede, 1986; Marcus & Gould, 2000; Marinetti & Dunn, 2002; McLoughlin, 1999; Rogers, Graham, & Mayes, 2007).

According to Marinetti and Dunn (2002), the lack of cultural adaptation can easily lead to failure in online learning. To prevent this online learning failure and to enhance the learning outcomes of online learning, it appears evident that online learning instructional designers and instructors should take into account learners' cultural backgrounds, cognitive and/or learning styles, preferred learning and teaching styles, and communication styles. However, before these factors can be taken into account in designing and implementing online learning, they must be clearly identified.

Synthesis of the available research led the researcher to observe that little is currently known about Asian students' preferred learning styles, teaching styles, or preferred interactions with instructors and/or peer groups in online learning environments. Consequently, little guidance is offered regarding how to narrow the gap of cultural dissimilarities for Asian students who are studying in US higher educational institutions, including Oklahoma State University where the researcher was a graduate student. The researcher came from Korea and studied in the US for seven years.

The literature has shown that potential problems have been identified by Asian students who take online courses in American universities (Aragon, Johnson, & Shaik, 2002; Auyeung & Sands, 1996; Catterick, 2007; De Vita, 2001; Edmundson, 2003; Jaju, Kwak, & Zinkhan, 2002; Kim, 2001; Liu, 2007b; Marcus & Gould, 2000; Marinetti & Dunn, 2002; McLoughlin, 1999, 2000; McLoughlin & Oliver, 1999; Pincas, 2001; Tu, 2001) and that these problems originated in Western instructional design, alienation of

user interface from native country, different cognitive and/or learning styles, language barriers, and technology issues. These issues appear to be rooted in cultural differences between learners and online learning designers and/or instructors. However, specific elements of these cultural differences have not been clearly identified. Until this clear identification occurs, reducing the impacts of cultural differences for preventing and reducing failure of online learning among Asian students in the United States will remain problematic. Verifying Asian students' specific online learning preferences and the learning problems associated with them will facilitate accommodating cultural differences among learners. Knowledge of such preferences and problems will provide useful information for making online courses more culturally inclusive in design in order to facilitate better learning by Asian students.

The Purpose of the Study

The purpose of this study was to identify cultural dimensions and online learning preferences of Asian students who took online courses at Oklahoma State University (OSU) in the United States. Specifically, this study identified: 1) the demographic profile of Asian students taking online courses at OSU; 2) the learning preferences of these Asian students; and 3) the personal problems and benefits identified by Asian students when they took online learning courses at OSU.

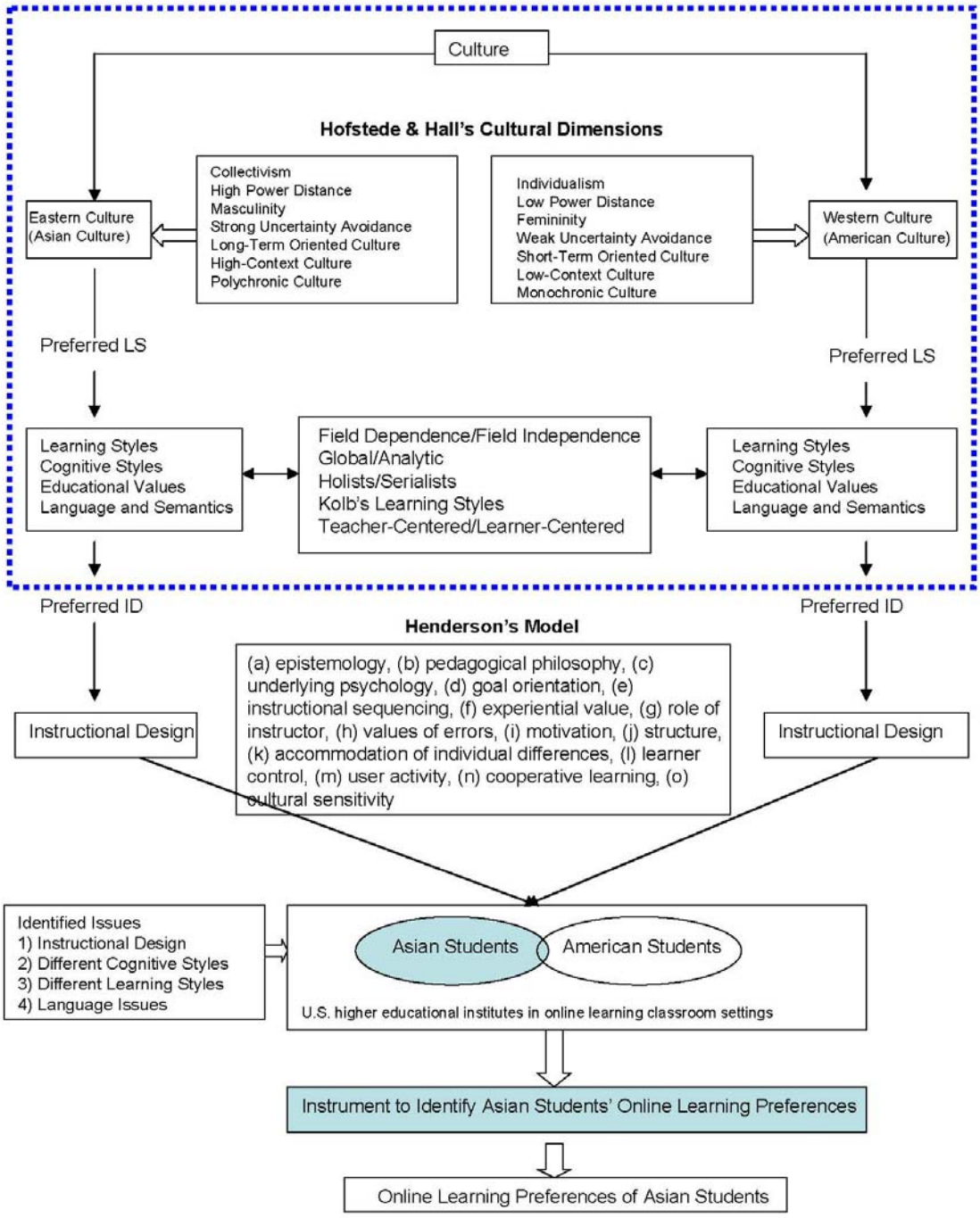
Research Questions

The following research questions guided this study:

1. What is the demographic profile of Asian students (i.e. Chinese, Taiwanese, Japanese, or Korean) who are taking online courses at Oklahoma State University (OSU) on the variables of gender, age group, nationality of origin, number of online learning courses taken, level of technology skills, major, and level of degree program?
2. What are the self-identified online learning preferences of OSU Asian students based on the dimensions of Henderson's multiple cultural model?
3. What problems related to online learning courses do Asian students at OSU identify?
4. What benefits of taking online courses do Asian students at OSU identify?
5. What are recommendations for improving online learning for Asian students studying at OSU?

Theoretical and Conceptual Framework

The theoretical and conceptual framework for this study combined Hofstede's cultural dimensions, Hall's cultural context and time dimensions, and Henderson's multiple cultural model. The framework is conceptualized in Figure 1.



LS: Learning Styles ID: Instructional Design
Hofstede's Cultural Dimensions: Power distance, Collectivism vs. Individualism, Masculinity vs. Femininity, Uncertain Avoidance, Long vs. Short term Orientation.
Hall's Cultural Typology: High vs. Low Context Communication, Polychronic vs. Monochronic Time

Figure 1. Theoretical and conceptual framework for cultural differences and learning preferences between Asian and American students in online learning classroom settings

Students who come from Asian countries are primarily influenced by Eastern culture, which has several important differences with Western culture. According to Hofstede and Hofstede (2005), Eastern culture is largely rooted in collectivism, high power distance, strong uncertainty avoidance, masculinity, and long-term orientation. In contrast, Western culture exhibits individualism, low power distance, weak uncertainty avoidance, femininity, and short-term orientation (Hofstede, 2001; Hofstede & Hofstede, 2005). According to Hall's (1976) cultural context model, Easterners use a high-context communication style and have a polychronic time concept. Westerners utilize low-context communication type and employ a monochronic time concept. The differences between Eastern and Western cultures identified by Hofstede and Hall are summarized in Table 1.

Table 1

Characteristics of Eastern and Western Cultures

Eastern culture	Western culture
Strong (high) power distance: defers to authority figure	Weak (low) power distance: respects the right to challenge authority
Collectivism: group-oriented culture	Individualism: individualistic culture
Strong uncertainty avoidance: peace-based, avoid conflict	Weak uncertainty avoidance: truth-based culture
Masculinity : males and females have distinctly different gender roles	Femininity: values gender-equality
Long-term oriented: focus on future	Short-term oriented: focus on past and present
High-context communication : communicate in implicit, indirect, and nonverbal ways	Low-context communication : communicate in explicit, direct, and informative ways
Polychronic time : do many things at once; time is flexible	Monochronic time : do one thing at a time; time is inflexible and tangible
"We" consciousness	"I" consciousness
Relationship oriented	Task-oriented
Interdependent oriented	Independent oriented
Values conformity	Values uniqueness
Respect elders, parents, and instructors	Seek public information
Values authority	Values equality

Sources: Chen, S-C., 2004; Hall, 1976, 1989; Hall & Hall, 1987; Hofstede, 1986, 2001; Hofstede & Hofstede, 2005

Students also have differences in their preferred learning and/or cognitive styles, some of which have been related to cultural differences. Students who come from Asian countries tend to exhibit field-dependent cognitive style as defined by Witkin and his colleagues (1977). This style exhibits holistic and global information processing, intuitive perspectives, instructor-centered learning preference, and diverging or accommodating

learning styles as defined by Kolb and Kolb (2005). By contrast, Western students such as those from the United States, Britain, Germany, and France display largely field-independent, analytic, and converging or assimilating cognitive and/or learning styles (Allinson & Hayes, 2000; Auyeung & Sands, 1996; De Vita, 2001; Ford, Wilson, Foster, Ellis, & Spink, 2002; Jaju, Kwak, & Zinkhan, 2002; Yamazaki, 2005). These preferred learning and/or cognitive styles have influence on the preferred instructional design to facilitate learning. Because of different instructional design needs, different learning and/or cognitive styles, different cultural values, and language differences, literature cited previously has shown that students from Eastern cultures have experienced difficulties in United States classrooms, especially in higher educational institutions, and these difficulties can be greater in online courses. In this study, the cultural theories of Henderson, Hofstede, and Hall provided support and direction for the working hypothesis that cultural factors might prompt issues for Asian students in US online learning environments.

Hofstede's Cultural Dimensions

Hofstede's framework is the most widely used national cultural framework in psychology, sociology, marking, information technology, or management studies (Adoeye & Wentling, 2007; Baack & Singh, 2007; Downey, Wentling, Wentling, & Wadsworth, 2005; Ford & Kortze, 2005; Marcus, 2006; Yamazaki, 2005). In education, several researchers (Edmundson, 2004; De Vita, 2001; Jaju, Kwak, & Zinkhan, 2002; Faiola & Matei, 2006; Ku & Lohr, 2003) have used Hofstede's cultural dimensions as the theoretical framework to identify the relationships among culture, instructional design,

cognitive styles, and learning styles. Hofstede (1991) created five cultural dimensions: power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, and long term versus short term orientation. These cultural dimensions have been identified in the literature as follows:

1. Power distance: Power distance refers to the distribution of power. People in high power distance cultures presume power is distributed unequally. Sometimes, they even expect inequality. China, Japan, and Korea are high power distance countries, whereas the United States is a low power distance country (Hofstede, 2001; Hofstede & Hofstede, 2005).

2. Individualism versus collectivism: The individualism versus collectivism dimension refers to the relationship between the individual and the group. In individualistic societies, individuals look after themselves and their immediate family only, whereas in collectivistic cultures, individuals belong to groups. The United States is an individualistic country, while China, Japan, and Korea are collectivistic countries (Hofstede, 2001).

3. Masculinity versus femininity: Masculinity and femininity refer to gender roles rather than physical differences. Masculinity emphasizes ambition, drive, acquisition of wealth, and success, while femininity exhibits caring and nurturing behavior, modesty, and tenderness (Downey, Wentling, Wentling, & Wadsworth, 2005).

4. Uncertainty avoidance: Uncertainty avoidance refers to how cultures adapt to changes and cope with uncertainty or ambiguity. It refers to the tolerance of ambiguity or anxiety from uncertain or unknown situations. Members of strong or high uncertainty avoidance cultures tend to avoid unknown situations and feel threatened in such

situations. Members of low uncertainty avoidance cultures are less threatened by unknown situations (Downey et al., 2005).

5. Long term versus short term orientation: Long term versus short term orientation refers to people's attitude and effort toward the future or the present. Members of long term orientation cultures focus on frugality, patience, and preserving for the future. Most Asian countries such as China, Hong Kong, Taiwan, Vietnam, and South Korea are considered to be long term orientation countries. Members of short term orientation cultures expect immediate results and achievement of goals and prefer practical values (Hofstede & Hofstede, 2005).

Hall's High Context and Low Context Cultural Communication Model

Another way to look at cultural differences was proposed by Hall (1976, 1984), who proposed a High Context (HC) and Low Context (LC) communication model based on message delivery. High-context communication means that most information is either in the physical context or internalized in the person, while very little is in the coded, implicit, transmitted part of message. A low-context communication means that information is conveyed in explicit and direct ways (Hall, 1976, 1989; Hall & Hall, 1987). In high-context cultures such as China, Korea, Japan, Malaysia, and some Latin American countries, communication tends to be implicit, indirect, polite, modest, and even ambiguous. In low-context cultures, such as the United States, people communicate in direct, explicit, precise, and informative ways. In low-context communication, information is more important than physical context or situation (Hall, 1989).

Hall's Monochronic and Polychronic Cultural Orientation

Hall (1984) also distinguished between monochronic time (M-time) and polychronic time (P-time) to describe two contrasting ways of handling time in different cultures. Typically, M-time people do one thing at a time. In monochronic cultures people tend to have a linear time pattern. North-European and North-American people are normally regarded as being monochronic time people. Polychronic people, on the other hand, like to be involved in many things at once and are committed to people and personal relationships rather than to the job. P-time people are associated with the cyclic time pattern rather than with linear time. Most Asian countries are regarded as polychronic people. P-time people change plans often and easily, whereas M-time people adhere rigorously to plans.

Henderson's Multiple Cultural Model

Henderson (1996) proposed a multiple cultural model (MCM) for minority and marginalized groups. Henderson's model includes 15 dimensions:

1. Epistemology
2. Pedagogical philosophy
3. Underlying psychology
4. Goal orientation
5. Instructional sequencing
6. Experiential value
7. Role of instructor
8. Value of errors

9. Origin of Motivation
10. Program flexibility (or Structure)
11. Accommodation of individual difference
12. Learner control
13. User activity
14. Cooperative learning
15. Cultural sensitivity (Henderson, 1996).

Comparisons of Hofstede, Hall, and Henderson's Multiple Cultural Dimensions

Several comparisons appear apparent across the Hofstede, Hall, and Henderson cultural dimensions and models. Henderson's pedagogical philosophy and the role of instructor are intuitively and logically similar to Hofstede's power distance dimension. Henderson's pedagogical philosophy divided into two different ranges from instructivism to constructivism. Instructivism emphasizes predetermined learning goals, precision, and specific objectives. The role of instructor is transmitting the knowledge. Instructivism is instructor-centered teaching and is related to power distances (Edmundson, 2004; Hall, 1989; Henderson, 1996; Hofstede, 2001; Jonassen, 1991; Rezaei & Katz, 2002). Hofstede's high power distance culture emphasizes the instructor's expertise and authority. In high power distance culture, students expect the instructor to initiate the class, and provide the learning content and materials (Hofstede, 2001; Hofstede & Hofstede, 2005). Compared to instructivism, constructivism focuses on self-directed learning and authentic learning. The role of instructor is mentor or facilitator rather than

presenting abstract knowledge (Edmundson, 2004; Hofstede 2001; Jonassen, 1991; Rezaei & Katz, 2002). This suggests a relationship to low power distance cultures.

Hall's high/low communication context and polychronic/monochronic cultural dimensions appear to be related to the Hofstede's high power and low power distance, as well as to the individualism versus collectivism dimension. For example, the characteristics of high-context communication are conceptually similar to high power distance characteristics. High-context communication focuses on indirect, implicit, and ambiguous messages, while low-context communication emphasizes explicit, clear, and direct message delivery (Downey, Wentling, Wentling, & Wadsworth, 2005; Gunawardena, Wilson, & Nolla, 2003; Hall, 1984, 1989). In high power distance culture, students do not express their opinions to the instructor in direct and explicit ways. Often they think expressing their opinions is construed as insulting the expertise of the instructors (Hofstede, 2001; Hofstede & Hofstede, 2005). The polychronic time concept appears to be logically similar to collectivism, whereas monochronic time appears closer to individualism. People from polychronic culture rely on family or group members. They are committed to people, and focus on human relationships and group work rather than personal achievement performing their own tasks (Edmundson, 2003; Hofstede, 2001; Hofstede & Hofstede, 2005), characteristics that are typically a collectivist orientation.

In the instructor's role, didactic instruction appears to be related to high power distance culture while the facilitative role seems to be associated with low power distance culture. The "didactic" instructor leads the class and provides a lot of information to students. Didactic instruction does not consider self-regulated learning and discovery

learning (Magliaro, Lockee, & Burton, 2005; Rezaei & Katz, 2002), which would preserve power distances. However, in low power distance settings, the instructor would guide the learner to learn by his or her own methods. Table 2 provides a summary of comparisons among Henderson, Hofstede, and Hall's cultural dimensions.

Table 2

Comparison among Henderson, Hofstede, and Hall's Cultural Dimensions

Henderson, Hofstede, and Hall's Multiple Cultural Dimensions		
Henderson	Hofstede	Hall
Instructivism	High (strong) power distance	High-context communication
Constructivism	Low(weak) power distance	Low-context communication
	Collectivism	Polychronic time culture
	Individualism	Monochronic time culture
Didactic or authoritarian	High (strong) power distance	
Equalitarian facilitator	Low (weak) power distance	
	Long-term orientation	Polychronic time culture
	Short-term orientation	Monochronic time culture

Sources: Hall, 1989; Henderson, 1996; Hofstede, 2001

Limitation, Delimitations, and Assumptions of the Study

Limitations

The researcher could not find an appropriate instrument to measure Asian students' online learning preferences. Based on Henderson's multiple cultural model, the researcher developed an online learning preference questionnaire. To establish content validity and construct validity, the researcher conducted a correlation coefficient test, pilot study, and exploratory factor analysis. The researcher selected 60 items among 94 items using strong correlation scores for content validity. The pilot study and field test were also conducted with both American and Asian students to establish the validity of the instrument. For construct validity, exploratory factor analysis was conducted using

principal components with a Varimax rotation. The results of factor analysis have shown almost 50% of variance when 3 factors of variance were loaded.

Although the researcher conducted the analysis above to establish content and construct validities, there could remain some limitations in measuring culturally-based learning preferences. First, the instrument validity has not been confirmed by other researchers. Therefore, to confirm the establishment of validity, further tests are recommend. Second, the validity tests were performed mainly using non-Asian students. To develop a culturally sensitive instrument, more Asian students' feedback and more field tests are recommended. However, these limitations were considered acceptable for this study because this instrument was newly developed and the study was exploratory. Another research limitation is that the population of interest for this study consisted only of East Asian students from specific countries who had taken online learning courses at Oklahoma State University in the United States, thus limiting the generalizability of the study. This is further discussed below as a delimitation.

Delimitations

The delimitations of a study are the characteristics that limit the scope or define the boundaries of research. In other words, to focus on specific participants or a central phenomenon, defining the boundaries of study, is delimitation (Creswell, 2003). The target population of this study was limited to East Asian students at Oklahoma State University who came from China, Korea, Japan, and Taiwan. The results of this study are therefore not applicable to and should not be generalized to other international student groups such as those whose nations of origin are India, Philippines, Vietnam, and Middle

East countries. This research was designed for college students in academic environments. Thus, the results of this research are not necessarily applicable to individuals using company web-based training or private sector online learning courses. The results of this study are also only applicable to students above 18 years old and in an institution of higher education. Generalization outside these boundaries is inappropriate without further research. These delimitations constrain the external validity of the study.

Assumptions

This researcher assumed that most online learning programs at Oklahoma State University were designed based on Western culture, philosophy, epistemology, and value systems. It was also assumed, based on the research literature, that students who come from Eastern culture often feel uneasiness and isolation in online courses because of unfamiliar user interfaces or non-standard English. Henderson (1996) and Reeves (1994) researched multiple cultural models and pedagogical dimensions to guide appropriate instructional design for multimedia education and Web-based learning. Henderson's multiple cultural model was assumed to sufficiently represent cross-cultural dimensions in online learning for the purposes of this study. Developing the survey questionnaire based on Henderson's multiple cultural model was deemed reasonable because Henderson's model is able to measure not only epistemology, pedagogical philosophy, instructor's role, program flexibility, learner control, motivation, and accommodation of individual differences, but it also measures cultural sensitivity.

It was assumed for this study that participants understood the research questions

accurately and answered them truthfully. To the extent that these assumptions were false, the internal validity of this study may have been compromised.

Definitions of Key Terms

Conceptual Definitions

- *Culture*: "Broadly viewed as the beliefs, philosophies, traditions, values, perceptions, norms, customs, arts, history, experiences, and patterns by individuals and groups" (Collis, 1999, p. 204).
- *Asian culture*: A culture system that is generally based on Confucian thought. In particular, Chinese, Korean, and Japanese culture are very similar in language and culture. All three of these countries use Chinese characters and belong to a collectivist culture, which means pursuing group maintenance and harmony and using shame to achieve goals rather than self-actualization (Liu, 2007a).
- *Eastern culture*: Basically synonymous with Asian culture. Eastern culture focuses on harmony, conformity, and interdependency. Geographically the Eastern cultural area represents most of Asian countries, specifically China, Japan, and Korea. Easterners believe mainly in Confucianism, Buddhism, or Taoism. Easterners are relation-oriented, group goals precedes personal goals, respect elders, and value authority (Fink & Laupase, 2000; Hofstede & Hofstede, 2005; Liu, 2007a)
- *Western culture*: Refers to primarily to "mainstream North American culture" and represents individuality, democracy, freedom of speech, self-advancement, and equal human rights (Nistbett, 2004, p. 169).

- *Learning preference*: the favoring of one particular mode of teaching over another (Sadler-Smith, 1996b, p.186).
- *Cognitive style*: An individual's preferred approach to organizing and representing information, or processing information (Riding & Rayner, 1998).
- *Learning style*: "The preferences or predisposition of an individual to perceive and process information in a particular way or combination of ways" (Zapalsak & Brozik, 2006, p. 327)
- *Online learning*: Generally refers to learning that is presented, facilitated, or enhanced by means of personal computer, CD-ROMs, and other distribution media and the Internet.

Operational Definitions

- *Asian or Eastern culture*: Refers in this study to the East Asian cultures of China, Taiwan, Japan, and Korea.
- *Western culture*: Refers in this study to the mainstream culture of the United States, particularly as exemplified in the State of Oklahoma.
- *Asian students*: In this study, Asian students is defined as Chinese (includes Taiwanese), Korean, and Japanese students at Oklahoma State University.
- *Online learning*: Courses presented at Oklahoma State University using the Blackboard, WebCT, Desire to Learn (D2L), two-way broadcasting, web-based learning or other Internet course portals. In this study, online learning includes both hybrid classes (combined face-to-face and online learning) or completely online classes.

- *Demographic profile*: Self-assessed description of Asian students taking online courses at Oklahoma State University on the following specific variables:

  a) Gender

  b) Age group (19-20, 21-30, 31-40, 41-50, Over 50)

  c) Nationality of origin (China, Korea, Japan, and Taiwan)

  d) Number of online learning course taken (None, 1-3, 4-6, More than 6)

  e) Levels of technology skill: Self assessment into one of the following categories (Ausburn, 2004, p. 330):

  - ❖ Novice: Knew how to do basic functions, could use basic functions in a few software programs, had basic Internet skills such as opening and navigating 'no frills' web-sites, sending and receiving e-mail, and using key-word search engines.
  - ❖ Fairly skilled: Knew how to do most things needed, could function skillfully in a variety of software, and could perform such Internet functions as power searches, plug-in download and install, and navigate web-sites using plug-ins.
  - ❖ Power user: Could do advanced software and hardware tuning, modify systems setting and install new hardware components, was a sophisticated user of a variety of high-end software, and could create own web-pages.

  f) Major

  g) Level of degree program (Bachelors, Masters, or Doctorate).

- *Self-identified learning preferences based on dimensions of Henderson's multiple cultural model*: Self-assessment on 5-point Likert-type rating scales on researcher-developed questions derived from Henderson's model.
- *Major problems/critical issues in online learning*: Responses of participating Asian students to open-ended survey questions.

Significance of the Study

Understanding cultural factors and students' preference benefits instructional designers, instructors, and learners. For instructional designers, widening and deepening the knowledge of cultural similarities and dissimilarities is necessary to customize culturally responsive online learning instructional design, to develop culturally appropriate user interfaces for online learning modules, to apply suitable teaching methods, and to choose appropriate learning activities for diverse learners. For instructors, understanding cultural backgrounds of the learners and their learning preferences and critical issues helps to establish a flexible, responsive, and inclusive online learning environment, identify teaching and learning strategies, and choose appropriate learning activities for diverse learners. Understanding cultural dissimilarities also has potential to maximize learning outcomes and minimize online learning failures for culturally diverse students. Exploring cultural backgrounds, online learning preferences of learners, and potential problems of diverse learners is also helpful in understanding the weaknesses and strengths of the learners from all cultures. This knowledge may be valuable in improving the effectiveness of instructional design to promote and facilitate an online learning environment at Oklahoma State University that

successfully services its culturally diverse student body and helps all students achieve their learning potential. In an increasingly global society, this is a worthwhile and desirable goal for all colleges and universities.

CHAPTER II

LITERATURE REVIEW

Cultural Dimensions in Online Learning

Hofstede and Hall's cultural dimensions are frequently used theories in psychology, anthropology, marketing, and management studies. Several recent studies (Chen, 2007; Edmundson, 2004; Richardson & Smith, 2007; Soares, Farhangmehr, & Shoham, 2007; Yamazaki, 2005) have applied cultural models to online learning. To develop culturally inclusive instructional design, user interfaces, and learning styles, Hofstede and Hall's cultural theories are often applied in education. Henderson (1996), McLoughlin (2000, 2002), and Rogers, Graham, and Mayes (2007) have all insisted that awareness of cultural diversity, conceptualization of a multiple cultural model, and culturally competent instructional design are important elements in online learning or e-learning courses.

Edmundson (2004) used both Hofstede's cultural dimensions and Henderson's multiple cultural model to discriminate e-learning outcomes between India and US participants. She articulated clearly how Hofstede's cultural dimensions and Henderson's multiple cultural model were closely related to each other. Her empirical research was focused on cultural dimensions and learning outcomes in globalized e-learning.

Marcus and Gould (2000) examined cultural orientations for appropriate Web user-interface design based on Hofstede's cultural dimensions and verified that members of high power distance cultures prefer highly-structured information, whereas people from low power distance cultures prefer less highly-structured information. Richardson and Smith (2007) studied the behavior in media choice in education based on Hall's high-context and low-context culture and power distance model. They found that Japan is a high-context culture, whereas America is a low-context culture. Their results showed that Japanese people preferred to use face-to-face communication more than using e-mail. Japanese avoided using e-mail; instead they chose more formal, less ambiguous media to show respect to professors. Americans perceived e-mail to be more intimate and casual between students and professors. Similarly, Lee (2000) studied media choice of using e-mail with Korean employees and found that they perceived that using e-mail might not show appropriate respect when communicating with superiors.

Adeoye and Wentling (2007) studied possible relationships between national culture and the usability of an e-learning system based on application of Hofstede's cultural dimensions and Nielson's usability attributes. In e-learning systems, usability means an efficient, effective and satisfying user interface (Marcus, 2006). Nielson explained that usability includes learnability, memorability, and satisfaction. Learnability could be measured based on ease of learning content from the provided website. Memorability is a measure of the learning system's easiness to remember things learned, and satisfaction is a measure of the pleasure of using the learning website's structures and processes. These attributes of a learning system influence learning effectiveness and outcomes. Adeoye and Wentling (2007) found that e-learning system interfaces were

closely related to national culture. They concluded students from high uncertainty avoidance cultures found websites to be the most frustrating type of e-learning system. Students from such cultures feel that differences and options are a danger and threat. They avoid ambiguous situations. Thus, when designing websites for high uncertainty avoidance cultures, it is advisable to use constraints, and design structured access to learning content. Members of low-power distance cultures find web pages to have higher usability than members of high-power distance cultures. Because high power distance cultures are highly structured and have tall hierarchies in organization, they do not easily share information from one level of the hierarchy to another.

Burgmann, Kitchen, and Williams (2006) also investigated the role and nature of culture on the graphical user interface in web pages. These researchers concluded that "culture does indeed influence design, but only to a certain context" (p. 75).

Marcus (2006) analyzed user interface of websites based on Hofstede's cultural dimensions. The findings showed that in navigation design, high power distance countries had a higher use of authentication, passwords, prescribed navigation routes and restricted choices, whereas low power distance countries preferred open access, multiple options and sharable paths. Marcus (2006) concluded that in the mental model for user interface, high power distance cultures would prefer complex, highly organized, highly categorized, highly populated structures and reference data with little or no relevancy, while countries with a low power distance might prefer simple, informally organized and categorized structures and less structured data with some or much relevancy.

Auyeung and Sands (1996) examined cultural dimension and learning styles using Hofstede's individualism versus collectivism dimensions. Jaju, Kawk, and Zinkhan

(2002) also studied cross-cultural dimensions and learning styles. These studies concluded that Hofstede's cultural dimensions and learning styles were related each other.

Hofstede's Cultural Dimensions

Power Distance

Hofstede and Hofstede (2005) defined power distance as "the extent to which the less powerful members of institutions and organizations expect and accept that power is distributed unequally" (p. 46). In Hofstede and Hofstede's research, institutions, such as the family, the school, and the community are the basic elements of society; organizations are the places where people work. They posited that high power distance cultures assume that power, prestige, wealth, laws, rights, and rules are distributed unequally (Marcus & Gould, 2000). High power distance cultures thus have unequal power distribution, a tall hierarchical organization system, and centralized political power. In high power distance cultures, subordinates often view the boss as a benevolent autocrat. Salary systems show wide gaps between the top and bottom in the organization (Marcus & Gould, 2000). People read few newspapers and rarely discuss politics. Government controls the labor unions. Incomes are unequally distributed. There is less dialogue and negotiation between boss and subordinates. High social status and class have more privileges, and this status comes mostly from family background and class. There is more perceived corruption. In high power distance cultures, children are expected to be obedient to their parents, and to respect their instructors and elders (Hofstede & Hofstede, 2005).

By contrast, lower power distance cultures tend to view subordinates and supervisors as closer and more interchangeable in their roles. They have flatter hierarchical organization and have distributed political power. There are less differences in salaries and status (Marcus & Gould, 2000). Instructors and students are perceived as equals. The goal of parental education is to let children take control of their own affairs as soon as they can. Independence is desirable when children grow up. Children, as adults, don't ask permission from parents when making important decisions. Formal respect and deference are seldom shown (Hofstede, 2001; Hofstede & Hofstede, 2005).

Power Distance Index (PDI)

Hofstede (2001) developed the power distance index in 1981 based on analysis of data from IBM employees' taken from all over the world. The power index was measured based on nonmanagerial employees' (subordinates') perception of whether their boss tended to make decisions in an autocratic or persuasive way (Hofstede & Hofstede, 2005). The index was also based on the subordinates' preferences of authoritative versus persuasive management style. To calculate PDI, Hofstede used the formulas the mean score of employees afraid + percentage perceived manager – percentage preferred manger. Power distance index has a value between 0 (lower power distance) and 100 (high power distance), but values below 0 and above 100 are technically possible. Thus a score near 0 (Zero) indicates the least acceptance of the unequal distribution of power, while a score near 100 indicates the greatest acceptance of unequal distribution of power within one's culture. For Hofstede's study, a value less than 50 represented low power distance and a value of 50 or more represented high

power distance (Adeoye & Wentling, 2007; Hofstede, 2001; Richardson & Smith, 2007). Hofstede (2001) pointed out that the index score represents the relative, not the absolute, position of individual members of the countries that were measured. In power distance, China showed a high index and was ranked 12-14 among 74 countries. South Korea's index was 60, which also indicated a high score in power distance. The United States had an index of 40 and ranked 57-59 among 74 countries. PDI values for several Asian countries and the US are shown in Table 3. Compared to Asian countries, the USA is a low power distance country.

Table 3

Power Distance Index (PDI) for Asian Countries and the United States

Country	PDI values *and Ranking from Among* 74 Countries
China	80 (Rank 12-14)
South Korea	60 (Rank 41-42)
Japan	54 (Rank 49-50)
USA	40 (Rank 57-59)

Source: Hofstede & Hofstede, 2005. p. 43

Power Distance and Education

According to Hofstede (1997, 2001) in high power distance cultures, the instructor and student are perceived as unequal. The students treat instructors with formal respect and deference. Instructor-centered teaching is dominant. The government, department of education, schools, or instructors select teaching materials, learning content, and even learning methods. The learning is performed with strict order, structured learning content and detailed assignments. The instructor controls and manages the learning process and instructors are never publicly criticized. Physical

punishment is acceptable in primary and secondary schools and is often considered good for the development of the child's character. Instructors are considered to be experts of the subject matter. The role of instructor is that of transmitting knowledge from an "all-knowing" instructor to a receptive student (Hofstede & Hofstede, 2005).

In contrast, Hofstede (2001) asserted that in low power distance cultures, social equality is assumed between instructors and students. A student-centered learning process is encouraged. Students are expected to manage and control their own learning. Students are supposed to ask questions when they do not understand something and are encouraged to actively discuss ideas with instructors, express disagreements, and give criticism in front of instructors. Students do not show any particular formal respect to the instructors outside of the school. The role of instructor is facilitator, guide, and mentor. Hofstede (2001) summarized key differences between educations in high and low power distance cultures as shown in Table 4.

Table 4

Key Differences of High/Low Power Distance and Education

High Power Distance	Low Power Distance
Instructors and students are unequal	Instructors treat students as equals
Students treat instructors with respect, even outside the academic situation	Students treat instructors as equals
Instructor-centered education	Learner-centered education
Instructor initiates the classes	Students initiate some classes
Instructor is knowledge transmitter and subject expert	Instructors are experts who transfer impersonal truth
Excellent instructor teaches quality learning	Quality of learning depends on two-way interaction between instructor and student.

Source: Hofstede, 2001, p. 107

Individualism versus Collectivism

Hofstede's (2001) individualism and collectivism dimension refers to the role of an individual versus the role of the group in a society. According to Hofstede, highly individualistic cultures believe that the individual is the most important unit, while highly collectivistic cultures believe that the group is the most important unit. In individualistic cultures the group tie is loose rather than strong and individuals are expected to look after themselves and their immediate family. Individualistic cultures value personal time, freedom, challenge, and such extrinsic motivations. In family relations, persons value honesty/truth, and use guilt to achieve behavioral goals and maintain self-respect. In an individualistic society, governments and culture place individual social-economic interests over the group, maintain strong rights to privacy, nurture strong private opinions, emphasize the political power of voters, maintain strong freedom of the press, and pursue self-actualization and personal freedom.

By contrast, Hofstede (2001) identified collectivistic cultures as having strong and cohesive relationships of society's members into groups. People who come from collectivistic cultures are expected to be unquestionably loyal to group and family. Those in collectivist cultures value training, physical conditioning, skills, and intrinsic rewards of mastery. In family relations, they value harmony over honesty/truth, use shame to achieve behavioral goals, and try to save face in detrimental social situations. Their societies and governments place collective social-economic interests over the individual. In a collectivistic society, the government dominates the economy, controls the press, and pursues the ideologies of harmony, consensus, and equality (Hofstede & Hofstede, 2005; Marcus & Gould, 2000). Similar to the power distance index, the Individualism Index

Value (IDV) was calculated based on IBM studies by Hofstede (2001). The IDV also represents the relative positions of countries. In Hofstede's study, the United States scored 91 on the IDV, while South Korea scored 18 on the IDV as shown in Table 5.

Table 5

Individualism Index Values (IDV) for Asian Countries and the United States

Country	Individualism Index (IDV) and Ranking among 74 Countries
United States	91 (rank 1)
Japan	46 (rank 33-35)
South Korea	18 (rank 63)

Source: Hofstede & Hofstede, 2005, p. 79

This result indicated that the United States has a highly individualistic culture, but South Korea has a collectivist culture. According to Hofstede (2001), countries with high individualistic scores tended to score low in power distance, whereas highly collectivistic countries tended to score as having high power distance. Nearly all wealthy countries scored high on IDV, while nearly all poor countries score low.

Individualism versus Collectivism and Education

Hofstede's (2001) research showed that in countries with individualistic society culture, students expect to be treated as individuals and with no regard for their cultural backgrounds. The relationship between instructor and students was found to be informal and relaxed compared to relationships in collectivist cultures. In individualistic cultures, open discussion and confrontations are allowed in class and are not considered threatening to the instructor or student, but rather considered an indication of a healthy exploration of the subject matter by the students. The purpose of education is preparing for the future and focuses on learning how to learn rather than how to do. There is an

assumption that learning in life never ends and that even after school and university ends, learning will continue. The diploma or educational certification is believed to improve the holder's economic worth but also improves his or her self-respect. It symbolizes a sense of achievement (Hofstede, 2001).

By contrast, Hofstede (2001) found that in collectivist cultures, students are treated as a group. The purpose of education is perceived as acquiring necessary knowledge and skills to be acceptable members of society. Learning is a one-time process and focuses on how to participate in society. A diploma is felt to be an honor to the holder and entitles the holder to associate with members of high-status social groups, to get, for example, a more socially attractive marriage partner. The characteristics of individualism versus collectivism are compared in Table 6.

Table 6

Key Education Differences between Individualistic and Collectivistic Societies

Individualism	Collectivism
Instructors deal with students as an individual	Instructors deal with students as a group
Students' initiatives are encouraged	Students' initiatives are discouraged
Students rely on their own tasks and current needs	Students rely on mainly preexisting group relations or in-group ties
Students respect themselves	Harmony, face-savings, and shaming used in class
Students expected to speak up in class or large groups	Students will not speak up in class or large groups without sanctions
Purpose of education is learning how to learn	Purpose of education is learning how to do
Diplomas increase economic worth and/or self-respect	Diplomas provide entry to higher-status groups

Source: Hofstede, 2001, p. 237

Masculinity versus Femininity

In Hofstede's (1991, 2001) cultural research, masculinity and femininity refer to gender roles rather physical differences. According to Hofstede and Hofstede (2005), in cultures with high masculinity, achievement, ambition, and acquisition of wealth are masculine traits, whereas caring and nurturing are feminine traits. Their Masculinity Index (MAS), like their power distance and individualism scores, measure relative, not absolute, positions of countries. Hofstede and Hofstede (2005) measured MAX for key countries are shown in Table 7.

Table 7

Masculinity Index (MAX) Values for Asian Countries and the United States

Country	Masculinity Index (MAS) Values and Ranking among 74 Countries
Japan	95 (Rank 2)
United States	62 (Rank 19)
South Korea	39 (Rank 59)

Source: Hofstede & Hofstede, 2005, pp 120-121

In Hofstede's study (1991, 2001, 2005) Japan had a very high Masculinity Index, ranking second among 74 countries. Compared to Japan and the United States, Korea had a low score. In masculine societies, masculine characteristics such as "a sense of responsibility, decisiveness, ambition, and strong liveliness were considered for men only, while caring and gentleness were seen as for women only" (Hofstede & Hofstede, 2005, p. 131). Based on their research, Hofstede and Hofstede (2005) asserted that in strong MAS cultures, there are distinct behaviors and values that are considered appropriate for boys and girls respectively. In strong (high) masculine culture, the society expects boys to play in more competitive and aggressive ways, whereas girls are

expected to play together cooperatively. The United States also showed high MAS scores compared to other countries, with a rank of 17 among 74 studied countries. Hofstede and Hofstede (2005) insisted that in masculine society, "men are supposed to be assertive, tough, and focus on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life" (p. 120). They also found that in feminine societies gender roles often overlap. Both men and women are tender, take care of the household together, are modest, and are concerned with the quality of life.

Masculinity versus Femininity and Education

Hofstede (2001) reported that in a masculine culture instructors should be excellent in their subject. Students were found to compete openly, seek high scores, and pursue excellent achievement. Failing in school in masculine cultures is a disaster in a student's life, and a shame for his or her family. Aggressive competition and brilliance are accepted in class. It is felt that instructors are required to have excellence in their academic subject matter and should possess good reputations. In contrast, in feminine cultures, students have more relaxed expectations. "Just passing" is acceptable, students are less aggressive, and average students are the norm. Instructors are valued more for their friendliness and social skills than for their academic achievement. Failing in school is a minor incident in a student's life, and instructors often encourage average and weak students. A comparison of characteristics of masculine and feminine cultures and education are shown in Table 8.

Table 8

Key Education Differences between Masculinity and Femininity Cultures

Masculinity	Femininity
Brilliance of instructor is expected	Friendliness of instructor is expected
Completion in class: try to excel	Jealousy of those who try to excel
Student's performance is important	Student's social adaptation is important
Best student is the norm	Average student is the norm
Public praise to encourage the average students	Public praise to reward good students
Competitive sports are part of curriculum	Competitive sports are extracurricular
Young children taught by women only	Young children taught by men and women
Instructors pay more attention to boys	Instructors give equal attention to girls and boys
Boys and girls study different subjects	Boys and girls study partially the same subjects
No special awards	Awards for good students and instructors

Source: Hofstede, 2001, p. 306

Uncertainty Avoidance (UA)

Uncertainty avoidance is "the extent to which the member of the culture feels threatened by ambiguous or unknown situations" (Hofstede & Hofstede, 2005, p. 167). Uncertainty avoidance is not risk avoidance; rather, it refers to how an individual feels about uncertain or unknown situations. High uncertainty avoidance cultures tend to avoid unknown situations and feel threatened in such situations. Low uncertainty avoidance cultures are less threatened by unknown situations. High uncertainty avoidance cultures tend to avoid ambiguous situations and expect structure in

organizations, institutions, and relationships to help make events clearly interpretable and predictable. High uncertainty avoidance individuals seem active, emotional, and even aggressive, they show their emotions, and raise their voices at times. Low uncertainty avoidance culture individuals tend to be less expressive and less openly anxious. They behave quietly without showing aggression or strong emotions and they seem easy-going, even relaxed (Hofstede, 2001; Hofstede & Hofstede, 2005). The Uncertainty Avoidance Index values of Japan, South Korea, and United States are shown in Table 9.

Table 9

Uncertainty Avoidance Index (UAI) Values for Asian Countries and the United States

Country	Uncertainty Avoidance Index (UAI) Values and Ranking among 74 Countries
Japan	92 (Rank 11-13)
South Korea	85 (Rank 23-25)
United States	46 (Rank 62)

Source: Hofstede & Hofstede, 2005, pp. 168-169

As shown in Table 9, Hofstede and Hofstede (2005) found that Japan and South Korea showed very high scores in uncertainty avoidance. People in these cultures felt that unstructured situations were surprising, different, unknown, and uncomfortable. The UAI score of the United States was less than 50, indicating that people in the US tended to be tolerant of unstructured or unknown situations.

Uncertainty Avoidance and Education

According to Hofstede (2001), students from high uncertainty avoidance cultures prefer structured learning, precise objectives, detailed assignments, and strict timetables. They like questions that have only one definite correct answer in their learning and

expect to be rewarded for accuracy. Students who come from high uncertainty avoidance cultures expect their instructors to be experts and know definite and certain answers in their learning. The instructors are never uncertain in their knowledge of the subject. When instructors use academic language, the students respect the instructors and them to be experts. Students do not express disagreements with the instructor because intellectual disagreement is perceived as personal disloyalty (Hofstede, 2001).

In contrast, students from low uncertainty avoidance cultures prefer less structured and more open-ended learning situations. They like broad objectives and assignments, and prefer to work without a timetable. The suggestion that there could be only one correct answer to a question is uncomfortable to them. Students expect to be rewarded for originality and innovation, not for being accurate in giving correct answers to questions. They don't mind expressing academic disagreement with their instructors and think academic achievement contributes to their own ability. Students accept an instructor who says "I don't know." Their respect goes to instructors who use plain language and to books that explain difficult issues in ordinary terms (Hofstede, 2001). Differences between high and low uncertainty avoidance cultures are listed in Table 10.

Table 10

Key Education Differences of High /Low Uncertainty Avoidance Cultures

High Uncertainty Avoidance	Low Uncertainty Avoidance
Students are comfortable in structured learning and concerned with the right answers	Students are comfortable with open-ended learning situations and concerned with good discussions
Instructors are supposed to have all the answers	Instructors may say, "I don't know,"
Instructors inform parents	Instructors involve parents
Difference is danger	Difference is curiosity
Students have fear in unstructured or unknown classroom situations	Students are comfortable in unstructured or unknown situations
Avoid risk situations in learning	Enjoy unknown situations for learning

Source: Hofstede & Hofstede, 2005, p. 181

Long versus Short Term Time Orientation (LTO)

Long-term orientation (LTO) represents "the fostering of virtues oriented toward future rewards-in particular, perseverance and thrift. Short-term orientation, stands for the fostering of virtues related to the past and present-in particular, respect for tradition, preservation of face, and fulfilling social obligations" (Hofstede & Hofstede, 2005, p. 210). Hofstede (2001) calculated a Long-Term Orientation Values Index (LTO) based on the Chinese Value Survey (CVS). The key principles of CVS are: 1) Mutual relationships are ordered by status (ruler-subject, father-son, older brother-younger brother, husband-wife, and senior friend – junior friend); 2) An individual is not individual, but is one member of a family and concerned with saving face and keeping harmony with social members; 3) Virtuous behavior to others is a basic rule; 4) Thrift and perseverance are valuable for the future. Hofstede (2005) listed measured LTO values for different countries as shown in Table 11.

Table 11

Long-Term Orientation Index (LTO) Values for Key Asian Countries and the United States

Country	Long-Term Orientation Index (LTO) and Ranking among 39 Countries
China	118 (rank 1)
Japan	80 (Rank 4-5)
South Korea	75 (Rank 6)
United States	29 (Rank 31)

Source: Hofstede & Hofstede, 2005, p. 211

These scores came from students in 38 countries' students in and one region (Quebec, French-speaking Canada) on the long-term verses short-term orientation dimension, measured by the Chinese Value Survey (CVS). As was the case for the other dimensions, these scores are relative positions, not absolutes (Hofstede & Hofstede, 2005). China showed the highest score in long-term orientation. The United States showed a low score in long-term orientation index values, indicating that the United States tends toward being a short-term orientation culture.

According to Hofstede and Hofstede (2005), long-term oriented cultures have a tendency for making efforts toward slow results and for persevering for a better future. In a long-term oriented culture, children should learn thrift and conserve their resources. Members of long-term cultures learn that a stable society requires unequal relations. The family is the prototype of all social organizations and consequently older people (parents) have more authority than younger people. Men have more authority than women. Virtuous behavior to others means not treating others as one would not like to be treated. Virtuous behavior in work means trying to acquire skills and education, working hard,

and being frugal, patient, and persevering. If extra income comes, it is supposed to be saved for rainy days. Leisure time is not important. Students consider "persistence" as an important personality trait, and value hard work, learning, self-discipline, and self-reliance. Children get gifts for education and development. Older children have authority over younger children in the family. Those from long-term oriented cultures believe that every student can succeed in their study if they make an effort. Students are encouraged to pursue applied and concrete sciences. Marriage is a pragmatic arrangement and living with in-laws is normal (Hofstede & Hofstede, 2005).

In contrast, Hofstede and Hofstede (2005) claimed that members of short-term oriented cultures pursue immediate results. They promote equal relationships, emphasize self-actualization and individualism, and focus on treating others as you would like to be treated. They teach children how to spend the money and resources in appropriate ways. If they have extra incomes, they save a small amount instead of saving a large amount. Leisure time is more important than work or the next project. Students from short-term oriented cultures consider freedom of expression, personal freedom, individual rights, and personal achievement to be important. Children get gifts for fun and love. Children learn tolerance and respect for others, and birth order is not important in family status. Students believe that success or failure is often attributed to luck. Students from short-term oriented cultures tend to pursue theoretical and abstract science subjects. Marriage is based on love. Living arrangements with in-laws are a source of trouble.

Long- and Short-Term Orientation and Education

Differences between long and short-term orientation culture in education as found by Hofstede and Hofstede (2005) are listed in Table 12.

Table 12

Key Education Differences Long /Short –Term Oriented Cultures

Long-Term Orientation	Short-term Orientation
Students learn how to be thrifty	Students learn tolerance and respect for others
Students attribute success to effort and failure to lack of it	Students attribute success and failure to luck
Students are talented in applied and concrete sciences	Students are talented in theoretical and abstract sciences
Good at mathematics and at solving formal problems	Less good at mathematics and at solving formal problems
Concern with respecting the demands of Virtue	Concern with possessing the Truth
Synthetic thinking	Analytic thinking

Source: Hofstede & Hofstede, 2005, p. 217

Summary of Hofstede's Cultural Dimensions in Education

In summary, Hofstede extensively researched the outward manifestations of five cultural dimensions in the context of teaching and learning. Table 13 summarizes Hofstede's cultural dimensions, their characteristics related to teaching and learning, and representative countries.

Table 13

Hofstede's Cultural Dimensions and Differences Related to Teaching and Learning

Power Distance Dimension	
High power distance (China, Korea, and Japan) Instructors are expected to take all initiatives in class. The instructor controls learners' learning path. The role of instructor is a transmitter of knowledge. Students can not speak up in class without instructor's sanction.	Low power distance (US) Learners are expected to be initiators in class. Self-paced learning and self-regulated learning are desired. The role of instructor is mentor, facilitator and guide. Students are supposed to ask questions and challenging instructors in the sprit of learning
Collectivism versus Individualism Dimension	
Collectivistic culture (China, Korea, and Japan) Group goal is more important than individual goal. The purpose of education is pursuing high social position or status rather than self-accomplishment or self-actualization. Learning is more often seen as a one-time process. Opinions are predetermined by group membership. Collectivist interests prevail over individual interests. Private life is invaded by groups.	Individualistic culture (US, Australia, Great Britain) Self-actualization and self-improvement are expected from education. Education is the preparation of self-sufficiency and independency. Learning is life long. Individual interests are important. Everyone is expected to have a private opinion. Privacy is respected.
Masculinity versus Femininity Dimension	
Masculine culture (Japan, Korea) Students often compete in academics and pursue high grades, and consider failure in schools as a disaster. Academic excellence and reputation are important at universities	Feminine culture (Sweden, Norway, Netherlands) Just passing is acceptable. Students are less aggressive. Failure in school is a relatively minor incident.
Uncertainty Avoidance Dimension	
Strong uncertainty avoidance (Korea, Japan) Students prefer structured learning, precise objectives, detailed assignment, and strict timetables. Students do not express disagreement with instructors. Intellectual disagreement is a matter of personal disloyalty. Correct answer is the most important in class. Instructors are supposed to know all correct answers.	Weak uncertainty avoidance (Denmark, US) Students prefer less structured and open-ended learning situation. Students like broad objectives and loose timetables. Students are allowed to express academic disagreement. Students do not expect that instructor to know all correct answers.
Long term versus Short term Orientation Dimension	
Long term orientation culture (China, Korea, Japan) Students prefer rote memorization, explicit learning objectives, and formal problems rather than open problems.	Short term orientation culture(US) Students like flexible learning objectives and open-ended questions. Learners are interested in both abstract sciences and practical knowledge.

Sources: Hofstede, 2001; Jaju, Kwak, & Zinkhan, 2002

Hall's Cultural Dimensions

Hall (1984, 1989) focused on cultural differences in communication context and time in his research. He proposed differences in a high- and low-context cultural dimension that depends on how each individual identity rests in the total communication framework. High-context means that "most of information is either in the physical context or internalized in the person, while very little is in the coded, explicit, transmitted part of message" (Hall, 1989, p. 91). In high-context cultures such as China, Korea, Japan, Malaysia, and some Latin American countries, communication tends to be implicit, indirect, polite, modest, and even ambiguous. According to Hall (1989) high-context cultures emphasize harmony, beauty, and oneness with nature. Confrontation and direct comparison are not favored. People from high-context cultures are sensitive to specific surrounding circumstance and cherish interpersonal relationships. Knowledge is situational and relational. Relationships depend on trust, build up slowly, but last a long time (1984, 1989).

In contrast, Hall (1984, 1989) claimed that in low-context cultures, such as the United States, people communicate in direct, explicit, and informative ways. In low-context communication, information is more important than context. Knowledge is public, external, and accessible, and communication is clear and short. Human relationships begin easily and end quickly. One's identity is rooted in one's accomplishment instead of family backgrounds. Communication is seen as a way of exchanging information, ideas, and opinion. The differences of high and low-context cultures in Hall's model are summarized in Table 14.

Table 14

Comparisons of High- and-Low Context Culture

High-context Culture	Low-context Culture
Knowledge is situational and relational	Knowledge is public, external, and accessible
Implicit communication	Explicit communication
Internalized messages	Plainly coded messages, public, external
Read nonverbal message	Accept expressed words
Reserved reactions	Reactions on the surface
Distinct in-groups and out-groups	Flexible in-groups and out-groups
Long term relationships	Short term relationships
Strong group bonds	Fragile people bonds
High commitment	Low commitment
Time is flexible	Highly organized time

Sources: Hall, 1984, 1989

Hall also distinguished between the concepts of monochronic time (M-time) and polychronic time (P-time) in cultures to describe two contrasting ways of handling time (Hall, 1984). Typically, M-time cultures do one thing at a time. Monochronic culture generally reflects a linear time pattern. North-European and North-American people are normally regarded as being monochromic (1984, 1989).

In polychronic cultures, on the other hand, people like to be involved in many things at once and are committed to people and personal relationships rather than to the job (Hall, 1989). P-time societies are associated with a cyclic time pattern rather than with linear time. South-European and Latin-American people are described as polychromic. P-time persons change plans often and easily, whereas M-time persons adhere religiously to plans. A summary of characteristics of monochronic and polychronic culture is presented in Table 15.

Table 15

Characteristics of Monochronic and Polychronic Cultures

Monochronic Culture	Polychronic Culture
Do one thing at a time	Do many things at once
Concentrate on the job	Are highly distractible and subject to interruptions
Time is inflexible and tangible	Time is flexible and fluid
Adhere religiously to plans	Change plans easily
Emphasize promptness	Base promptness on the relationship
Used to sort-term relationships	Have strong tendency to build lifetime relationships
Work time is clearly separable from personal time	Work time is not clearly separable from personal time
Show great respect for private property	Borrow and lend things often and easily

Sources: Hall, 1984, 1989.

Henderson's Multiple Cultural Model

Henderson (1996) proposed a multiple cultural model to promote equity of outcomes for diverse learners, particularly learners from disadvantaged minorities or marginalized groups. She proposed her multicultural pedagogical model by modifying Reeves' (1994) pedagogical dimensions which he developed for computer-based education. Reeves' dimensions are described in Table 16. For these dimensions, two sets of extreme poles are presented as a continua with a graduated range of values between the two extreme ends of the scales. The polar descriptions are not used to imply any judgment that one scale is better than the other. They do not provide "do" or "doesn't" instructions. Rather they provide valuable frameworks for assessing educational practice. Each extreme is simply different.

Table 16

Reeves' Pedagogical Dimensions (1994)

Dimensions	Extremes on the Continuum
Epistemology	Objectivism ⟷ Constructivism
Pedagogical Philosophy	Instructivist ⟷ Constructivist
Underlying Psychology	Behavioral ⟷ Cognitive
Goal Orientation	Sharply focused ⟷ Unfocused
Experiential Value	Abstract ⟷ Concrete
Teacher Role	Didactic ⟷ Facilitative
Program Flexibility	Teacher-proof ⟷ Easily modifiable
Value of Errors	Errorless learning ⟷ Learning from experience
Origin of Motivation	Extrinsic ⟷ Intrinsic
Accommodation of Individual Differences	Non-existent ⟷ Multifaceted
Learner Control	Non-existent ⟷ Unrestricted
User Activity	Mathemagenic ⟷ Generative
Cooperative Learning	Unsupported ⟷ Integral
Cultural Sensitivity	None-existent ⟷ Integral

In 1996, Henderson presented a cultural pedagogic interactive multimedia instructional design model in which she changed from Reeve's "cultural sensitivity" dimension to what she called a "multiple cultural contextualization" dimension and posited that dimension as being at the center of all the other 14 dimensions (Figure 2). She asserted that it was necessary to view "any cultural group and individuals are not as objects or passive recipients but as subjects, that is, as active participants who are given

and take responsibility as agents, transmitters, receivers, and actors in the learning paradigm" (Henderson, 1996, p. 96).

Henderson (1996) also added the dimension of "instructional sequencing" to Reeves' model. She renamed "program flexibility dimension" to "structure". She proposed that the primary function of her multiple cultural model is designing an inclusive learning environment and promoting equity of learning outcomes for disadvantaged minorities and marginalized groups. According to the Henderson (1996) multiple cultural model, instructors need to overtly incorporate minority culture to mainstream schools.

Henderson's modified model is shown in Figure 2.

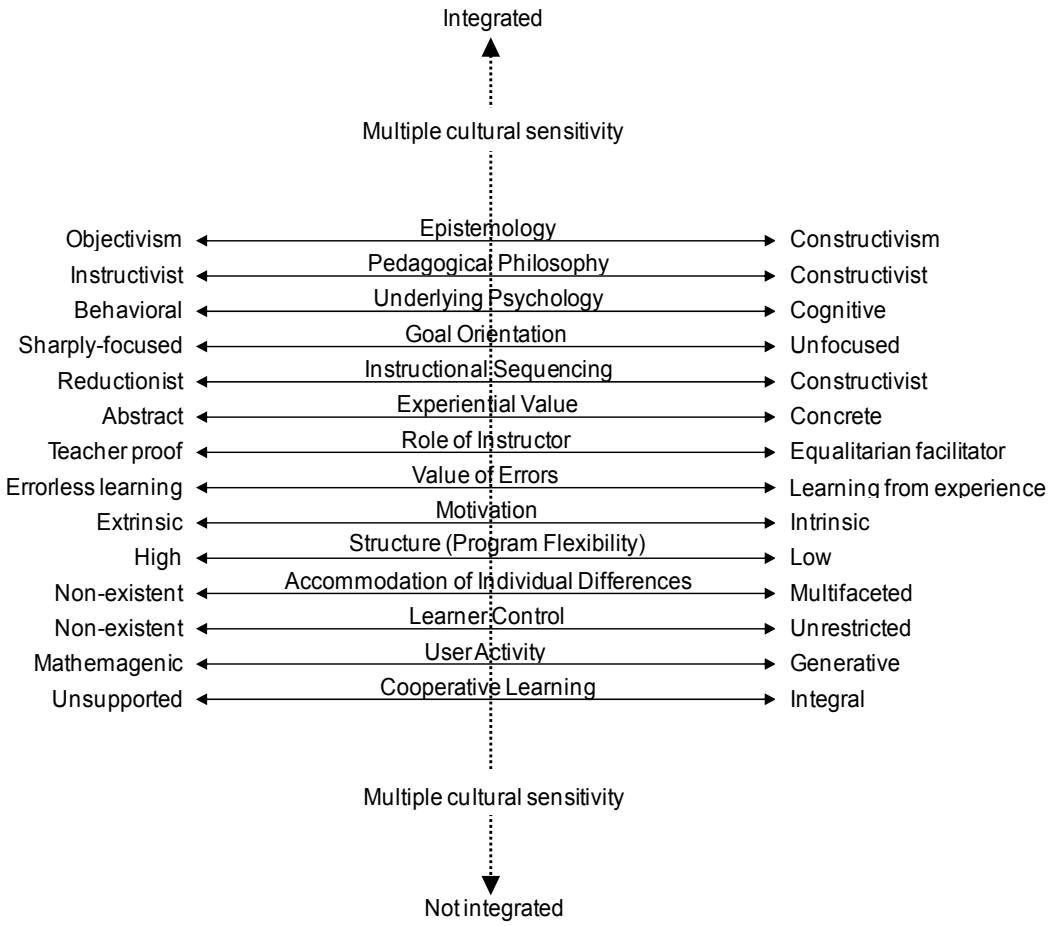


Figure 2. Diagram of Henderson's multiple cultural model (MCM)

Note : From "Instructional design of interactive multimedia: A cultural critiques," by Henderson, L., 1996. Copyright, 2007.

As shown in the diagram in Figure 2, there are 15 dimensions in Henderson's multiple cultural model for inclusive instructional design: 14 on the horizontal axis and one on the vertical that runs through or across the other 14. These 15 dimensions are discussed below.

1. *Epistemology : (Objectivism* $\longleftrightarrow$ *Constructivism*)

The epistemology dimension ranges from objectivism to constructivism. Epistemology is the theory of knowledge. It attempts to question "what is the nature of knowledge?" Objectivism is the belief that there is one true and correct reality. "They [objectivists] believe that knowledge consists in correctly conceptualizing and categorizing things in the world and grasping the objective connections among those things and those categories" (Vrasidas, 2000, p. 342). Knowledge and learning are achieved when the abstract symbols that learners come to know correspond to the one and only real world. Learning is simply defined as change in behaviors and/or change in the learner's cognitive structures. Therefore, instruction should be designed to effectively transfer the objective knowledge into the learner's head. The role of education is to help students learn about the real world. Students are not encouraged to make their own interpretations of what they perceive. The role of instructor is interpreting the world or entities for students (Jonassen, 1991).

Objectivists emphasize what the instructor hopes to achieve and use a behavioral approach to learning and assessment. Objectivism emphasizes explicit learning objects, specific learning skills, and observable behaviors under certain conditions. To promote learning outcomes, the instructor gives predetermined assignments, readings, and deadlines for submitting homework. The role of the instructor is the transmitting of information. The evaluation of learning in objectivism is criterion referenced and assessment is measured using test items that ask the learner to demonstrate knowledge (Bellefeuille, 2006; Carson, 2005; Jonassen, 1991; Vrasidas, 2000).

Constructivism has several schools of thought within the constructivist paradigm. According to Rezaei and Katz (2002) the three most prominent ones are cognitive (personal) constructivism, social (or sociocultural) constructivism, and radical constructivism. Personal constructivists believe that knowledge is constructed based on a learner's previous experience or cognitive structures. Social constructivists believe that knowledge is constructed in communities of practice through social interaction and knowledge is the result of social interaction and shared sociocultural experience (Geelan, 1997). Radical constructivists believe that there is no real world, and no objective reality that is independent of human mental activity. "Reality is just an individual's opinion. Radical constructivism views "knowledge as a form of mental representation and a construction of the human mind" (Rezaei & Katz, 2002, p. 369). "Reality does not exist separately from the observer" (Shapiro, 1994, p. 7). Knowledge is essentially a function of the workings of one's cognitive structure, thus a very personal experience. Knowledge is based on the individual's experience and environment (Doolittle & Camp, 1999). Jonassen (1991) explained the important epistemological assumption of constructivism: "The meaning is a function of how the individual creates meaning from his or her experiences. We all conceive of the external reality somewhat differently, based on our unique set of experiences with the world and our beliefs about them" (p. 10).

Constructivism emphasizes that learning is the process of internalization or reconstruction of external reality and building accurate internal models or representations of the real world. Contextualized and situated learning are emphasized. The role of the instructor is providing problematic situations or ill-structured knowledge rather than utilizing predetermined instruction. The constructivist instructor needs to provide

multiple representations or perspectives on the learning content instead of providing oversimplified conceptual interrelatedness. Instructional goals and objectives are not imposed, but rather negotiated. Evaluation of learning is not criterion referenced and self-evaluation is desired (Vrasidas, 2000).

2. *Pedagogical philosophy (Instructivist ⟷ Constructivist)*

Pedagogical philosophy can be divided into instructivism and constructivism. These two extreme poles are a graduated continuum. Instructivism asserts that a body of knowledge has been developed and archived by generations of scholars, and the purpose of instruction is to enable students to acquire this knowledge and skill. The role of the instructor is transmitting that knowledge through designing specific learning goals and objectives. The instructivist approach does not take into account learner-centered learning and discovery learning. Traditional instruction and instructor-centered teaching are associated with instructivism (Rezaei & Katz, 2002). Instuctivists believe that carefully designed direct instruction is more effective than less structured constructivist learning. Instructivism focuses on breaking topics into discrete skills. Instructivist pedagogy generally considers learners as empty vessels to be filled with learning (2002).

Constructivist pedagogy is based on cognitive theory. Constructivism is a theory about how people learn. Dewey, Piaget, Vygotsky, and Bruner all proposed that learners could learn actively and construct new knowledge based on their prior knowledge (Huang, 2002). The constructivist approach emphasizes the process of learning and not the product. Constructivism contends that "people construct meaning through their interpretive interactions *with*, and experiences *in,* their social environment" (Rezaei & Katz, 2002, p. 369). The constructivist instructor's role is to present authentic knowledge

rather than abstract knowledge by providing multiple perspectives, authentic activities, and real-world environments.

3. *Underlying psychology (Behaviorism ⟷ Cognitive theory)*

In the underlying psychology dimension, at one end of the continuum is behavioral psychology, while cognitive psychology at the other. Behaviorism focuses on observable behavior change, instructor control, sequential learning hierarchies, and learning outcomes. Learning objectives are specified, quantified, and individualized. Behaviorism uses programmed instruction, mastery learning, computer assisted instruction, and performance-based learning (Merriam & Caffarella, 1999; Elias & Merriam, 1995). Behaviorism emphasizes instructor control, sequential learning hierarchies, and learning outcomes. In this approach, learning is intended to change behavior and is linear and sequential (Merriam & Caffarella, 1999).

Cognitive psychology is concerned with various mental abilities such as perception, learning, memory, reasoning, problem solving, and decision making. Cognitive theory is the study of how humans collect store, modify, and interpret their information (Heckman, 1993). Cognitive theorists focus on learner control, knowledge structure, active self-regulation, and the learning process. They view learning as not linear and as not acquired by assembling bits of simple facts. They view learning as whole patterns rather than parts or isolated components with perception, insights and meaning as the key concepts (Merriam & Caffarella, 1999).

4. Goal orientation (Sharply focused ⟷ Unfocused)

The goal orientation dimension rages from sharply focused to unfocused. The sharply focused teaching strategy emphasizes clear and precise learning objectives. It

uses mainly direct instruction, tutorials, drill and practice, and rote memorization methods. Instructors provide factual information. Unfocused goal objectives emphasize general and broad objectives. Students practice inductive ways to learn using discovery learning, virtual reality simulation, and conceptual methods (Edmundson, 2003).

5. Instructional sequencing (Reductionism ⟷ Constructivism)

The instructional sequencing dimension represents the range from reductionism to constructivism. Reductionism is an approach ignoring the relationships between system and subsystems. Reductionism attempts to reduce ideas into a small, discrete set of ideas to test (Creswell, 2003). The instructor offers learning information in small parts and organizes the learning content in logical order. In most cases, the learners do not have the full picture of what they are learning until the semester ends. Reductionism postulates that learning is a complex process, and its proponents believe effective learning occurs only in a rigid and hierarchical progression with linear instruction. The curriculum is often divided and ordered into unrelated parts. The fundamental premise is that students are unable to learn higher-order skills unless they master lower-order skills first (Edmundson, 2003; Poplin, 1988).

In contrast, constructivists believe that learning is personal and that to build new meaning, learners need only a few prerequisites. The role of the instructor is organizing new information meaningfully and presenting it to learners based on their previous experience. The instructor offers whole pictures to the students and students break down learning components from whole pictures (Jonassen, 1991). Leaning materials are presented from whole to part. Students are encouraged to question concepts and explain their reasoning as an essential part of learning (Merriam & Caffarella, 1999).

6. *Experiential value (Abstract ⟷ Concrete)*

The experiential value continuum ranges from abstract to concrete. Experiential learning focuses on learning from experience, learning by doing, and learning from situations emphasizing practical, contextualized, and hands-on learning (Kolb, 1984; Ndoye, 2003). Abstract learning activity values theoretical knowledge, while concrete learning activity values real-life experiences. In abstract learning classrooms, instructors largely teach theories and accumulated knowledge and use mainly lectures with textbooks. Learning from concrete experience means learning from real life or learning from external situation (Illeris, 2007; Reeves, 1994). Apprenticeship, service learning, community learning, and contextualized learning belong to experiential learning. The role of instructors, in concrete learning activity classrooms, is structuring and organizing a series of good experiences which positively influence each individual's potential future experiences (Reeves, 1994).

7. Instructor's role: (Didactic ⟷ Facilitative)

The instructor's role dimension represents a continuum of instructor roles from didactic to facilitative. Didactic instruction is rigid transmission of facts and knowledge to students, who are seen as passive receptors. Teaching is the focus of the classroom experience rather than learning. Instructors typically use a lecture format to present facts and accumulated knowledge. The role of instructor is supplementing learning content and materials for students. The students passively absorb the knowledge, and reproduce learning content later when learning is evaluated. Didactic instruction is instructor-centered learning. The student's previous experience is not important in didactic

instruction. Knowledge is symbolic and isolated in real life (Smerdon, Burkam, & Lee, 1999).

Facilitative instruction focuses on authentic instruction, student-centered teaching, and constructivist teaching. The role of a facilitative instructor is helping and guiding the learning process. Facilitative instruction is based on constructivism. According to Smerdon, Burkam, and Lee (1999), "the theory of constructivism is based on the idea that people learn better by actively constructing knowledge and by reconciling new information with previous knowledge" (p. 8). Facilitative instruction views learning as contextualized, active, and culturally constructed. It focuses on building on students' experiences rather than from determined and fixed facts (Singer & Moscivici, 2008).

The roles of the facilitative instructors are helping students to construct new knowledge meaningfully based on previous learning; encouraging student to set personal learning goals; designing learning materials various ways; providing ongoing feedback; and encouraging self-regulating learning (Holly, Legg, Mueller, & Adelman, 2008).

In online learning, the roles of instructor are a mix of didactic and facilitative. Online instructors must be learning designer, consultant, lecturer, evaluator, learning resource manager, and even technical assistant. The main role of the instructor is teaching. However, in the digital age, the roles of instructors are more than teaching. In the online learning situation, the instructor is responsible for the success of a virtual class as well as responsible as a knowledge content facilitator. The instructor also needs to help student to develop autonomy, critical thought, proactive attitudes, and self-organization for effective online learning (Holly, Legg, Mueller, & Adelman, 2008).

8. *Value of errors (Errorless Learning ⟷ Learning from Experience)*

The value of errors dimension presents a continuum of perspectives concerning the value of errors, ranging from errorless learning to learning from trial and error experience (Reeves, 1994). Errorless learning refers to minimizing incorrect responses from several choices. The purpose of errorless learning is not choosing correct answers, but rather to reduce the errors from learning (Mueller, Palkovic, & Maynard, 2007). Errorless learning proponents support programmed instruction. They have a belief that ideal learning is making no mistakes and answering questions correctly. The students repeat their learning until they do not generate any mistakes. In contrast, learning from experience emphasizes that the learner can learn from mistakes and considers errors as a part of the learning process. (Reeves & Reeves, 1997).

9. *Motivation (Extrinsic ⟷ Intrinsic)*

In extrinsic motivation, the motivation for learning originates from outside rewards such as good grades, parents' praise, and earning more money (Merriam & Caffarella, 1999). In contrast, "Intrinsic motivation originates from within the individual and results in enjoyment of the process of increasing one's competency in regard to particular academic tasks" (Walker, Greene, & Mansell, 2006, p. 4). Intrinsic motivation represents an internal desire to learn, perform, and succeed for internal satisfaction.

According to Keller's (2008) research, learners showed confidence and achievement when they received positive motivational messages from instructors in e-learning or blended learning situations compared to control group.

10. *Program flexibility (Instructor Proof ⟷ Easily Modifiable)*

Henderson (1996) renamed program flexibility to structure. Program flexibility was used by Reeves in 1994. In the present research program flexibility is used with (program) structure interchangeably. Program flexibility represents a continuum ranging from "instructor-proof" to "easily modifiable". An instructor-proof instructional program does not allow any local adaptation and does not provide flexible guidance of learning. An instructor-proof program restricts all learning content, materials, and processes. There is also restriction to changing learning objectives or using different evaluations of learned concepts. In contrast, an easily modifiable instructional program allows flexibility for multiple learning approaches and methods to enhance effectiveness of learning. An easily modifiable program uses various learning methods and assessments such as lectures, experiments, inquiry learning, and field trips, and authentic assessment (Reeves, 1994).

11. *Accommodation of individual difference (Non-Existent ⟷ Multifaceted)*

The continuum of accommodation of individual differences ranges from non-existent to multifaceted. Multifaceted accommodation recognizes that each learner has different learning attitudes, previous knowledge and experiences, motivations, cognitive styles and learning styles. It also acknowledges that each individual accepts processes, organizes, and retrieves information in different ways. In some instructional contexts, knowledge and learning are constructed and presented without any accommodation of individual differences, but in other contexts knowledge and learning are presented in a variety of ways to accommodate learners' differences. To accommodate individual

differences, the instructor needs to provide scaffolding and metacognitive support (Edmundson, 2003; Reeves & Reeves, 1997; Rosenfeld & Rosenfeld, 2004).

12. *Learner control (Non-Existent ⟷ Unrestricted)*

The dimension of learner control ranges from complete control of the learners to unrestricted control by the learner. Non-existent learner control refers to environments in which the instructor controls and manages learners' whole learning process. Proponents non-existent of learner control insist that learners achieve better performance where there are higher degrees of learning control. Most Asian countries such as China, Korea, and Japan believe non-existent learner control is better than unrestricted learner control (Edmundson, 2003; Liu, 2007a; Reeves, 1994). Unrestricted learner control refers to instructional designs where learners make their own decisions concerning the aspects of the path, flow, or events of instruction (Chou & Liu, 2005). In other words, the learner controls and manages his or her own learning contents, pace, sequences, and even assessments. This view is related to self-regulated learning or self-directed learning. Online learning, hypermedia learning, and web-based learning usually provide unrestricted learner control. Learners can choose learning modules, learning sequences, and learning assessments based on their own judgment and at their own pace (Chou & Liu, 2005; Reeves, 1994; Scheiter & Gerjets, 2007).

13. *User activity (Mathemagenic ⟷ Generative)*

The user activity dimension is divided into mathemagenic and generative environments. The user activity dimension describes learning environments. Some learning environments are open to learners for easy access to various learning resources and content. These learning environments are called *generative learning environments*.

However, some learning environments are *mathemagenic* or restricted to learners. Mathemagenic learning environments are often based on instructivist pedagogy. The concept of mathemagenic activities expresses the idea that there are activities the learner can carry out that will result in their learning (Rothkopf, 1970). Mathemagenic activities are relevant to specified instructional objectives, specified situations or places. In mathemagenic environments, the instructor sets specified instructional objectives and learning tasks. Learners accept and acquire the instructional document without question. The instructor observes the learner's overt and controllable behaviors –such as answering questions, reading textbooks, or using software - rather than assessing internal cognitive action. Mathemagenic activities are instructor-provided learning activities. One of the most common mathemagenic instructional strategies is learning through a textbook. Mathemagenic learning aids in the recognition of important facts or concepts of particular relevance (Ray, 2005).

In generative learning environments, the learner constructs and assigns meaning to learning based on prior learning. Generative learning emphasizes the learners' involvement, and their control of their own learning process and path. Generative user activity implies a learner's deep and active learning. Learners engage in their own learning, creating, elaborating, and representing of their knowledge (Reeves, 1994). Generative activities involve the actual creation of meaning in learning. Generative instructional strategies are learner-centered (Jonassen, 1985). The characteristics of generative and mathemagenic strategies are summarized in Table 17.

Table 17

Characteristics of Generative and Mathemagenic Strategies

Mathemagenic Strategies	Generative Strategies
Text based learning	Learner-generated learning
Instructor provided knowledge	Individually-constructed knowledge
Pursues reproduction of learning content	Pursues constructive knowledge
Focuses on extrinsic motivation	Focuses on intrinsic motivation
Provides content relevant classes	Provides personally relevant classes
Supplants metacognition	Stimulates metacognition
Identifies knowledge structures	Activates appropriate knowledge structures
Objective-referenced assessment	Learner-referenced assessment

Sources: Jonassen, 1985; Ray, 2005.

14. *Cooperative (Collaborative) learning (Unsupported* $\longleftrightarrow$ *Integrated)*

The cooperative learning dimension ranges from lack of support for cooperative learning to the integration of cooperative learning. Collaborative learning or cooperative learning refers to "an instruction method in which students at various performance levels work together in small groups toward common goals" (Gokhale, 1995, p. 1). Proponents of cooperative learning claim that the active exchange of ideas within small groups not only increases interest among the participants but also promotes critical thinking. Shared learning in groups or pairs provides students opportunities to engage in discussion and take responsibility for their own learning. If the instructor promotes cooperative learning, this tends to result in higher achievement, greater long-term retention of what is learned, more frequent use of higher-level reasoning (critical thinking), more intrinsic motivation, transfer of learning from one situation to another, and greater time on task (Yazici, 2005). In spite of these advantages, cooperative learning may not always be successful. In

reality, cooperative learning requires time; persistence; practice; responsibility; and sensitivity to design, observe, and process the collaborative learning experiences (Jehn & Manmix, 2001; Miller, 2003). However in online learning situations, cooperative learning can be achieved by using group discussion or shared experience board (Smith, 2001).

15. *Cultural sensitivity (Not Integrated ⟷ Integrated)*

The cultural sensitivity dimension ranges from not integrated to integral (actioned). In other words, cultural differences are either excluded or integrated into the curriculum. Henderson (1996) used the terms of "actioned" or "incorporated" instead of integrated. She used the "actioned" to mean that elements of minority, indigenous, and marginal cultures are incorporated into the mainstream culture. It also means cultural contextualization. Henderson (1996) insisted that to include cultural minority and ingenuous groups into mainstream culture, the instructor should acknowledge multicultural realties, be aware of multiple cultural ways of learning and teaching, and have sensitivity of cultural differences.

To integrate cultural differences in learning, instructors should be aware of learners' needs and preferences, communication channels, and cultural values. To promote learning effectiveness, it is necessary to provide multiple perspectives, learning resources, flexible learning goals, collaborative projects, and various modes of assessments (Marinetti & Dunn, 2002; McLoughlin, 1999; Reeves & Reeves, 1997).

Culture and Learning/Cognitive Styles

Culture influences the development of individual learning styles and cognitive styles because culture and learning are intertwined and interdependent. Culture means differences in ethnicity or nationality as well as differences in patterns of thought, attitudes, and behaviors. These differences shape learning preferences (Nieto, 2003).

Several researchers (Auyeung & Sands, 1996; De Vita, 2001; Jaju, Kawk, & Zinkhan, 2002; Nisbett & Miyamoto, 2005; Savvas, El-Kot, & Sadler-Smith, 2001; Yamazaki, 2005) have examined the relationships between cultural dimensions and learning styles. Although there is agreement that learning styles and/or cognitive styles are related to individual traits or characteristics, it is also impossible to deny the impacts of culture. Learning is at least partially interrelated with culture because learning occurs in the context of socialization and in the context of specific educational environments. These specific educational environments are influenced by cultural values, philosophies, customs, traditions, and educational systems (De Vita, 2001; Hofstede, 1986; Hofstede & Hofstede, 2005; Jaju, Kawk, & Zinkhan, 2002; McLoughlin, 1999; Yamazaki, 2005).

Hofstede and Hofstede (2005) insisted that a culture shapes its people's preferred modes of learning through their socialization experiences. Culture is "collective programming of the mind" (p. 4). The word "programming" is a computer term. Its use indicates that when people process information, they do it automatically without conscious choices. It means that learning is saturated and contextualized in culture (Barmeyer, 2004; Nieto, 2004). De Vita (2001) insisted that there was little room for doubt about cultural effects upon the development of learning styles. Yamazaki (2005) examined the relationship between particular cultures and learning styles. She concluded

that there were statistically significant relationships between cultures and learning styles based on her empirical studies.

Identifying the differences of learning styles between Asian and Western students is beneficial for Asian students because it can help decrease the gap between local and international students. Although online learning has many merits, there are also some limitations that appear for international students. For example, it appears that online learning is more suited to independent and self-directed learners (Smith, 2001, 2005). Online learning also involves a large degree of isolation of learners from the instructor and classmates. This can cause some hindrances to learning when Asian students encounter communication problems or unclear assignments due to language problems and misinterpretation of culture-based language (Ku & Lohr, 2003; Tu, 2001; Wang, 2001; Wang, C-H, 2004). To narrow the gap of dissimilates of Asian and Western students identifying online learning preferences is important.

Learning Preference

Learning preference can be defined simply as the choice of one learning situation over another (Johnson, 2007; Sadler-Smith, 1996b; Sternberg & Zhang, 2008). Turville (2008) asserted that most students do not have just one single type of learning preference. They often have several types of learning preferences that work well for them. Learning preference includes "learning styles, personality styles, culture, gender, intelligence, and learning environment preferences" (p. 4). Learning preference is generally used in a broad sense to include student learning styles, intelligence, and culture that influence student's learning experiences. People have different strengths in their preferences.

Sadler-Smith (1996b) asserted that "learning preference is the favoring of one particular mode of teaching over another and as such are readily expressed and observed: ' I just don't like lectures-I much prefer practical classes and project work' " (p. 186).

Sadler-Smith and Riding (1999) investigated the relationships between learners' cognitive styles and their instructional preferences among 240 business students of a university in the United Kingdom. Cognitive styles were assessed using the *Cognitive Styles Analysis Test,* which assesses the wholist-analytical and verbaliser-imager dimensions of style. To identify instructional preferences, learners were categorized in three groups; dependent learners; collaborative learners; and independent learners.

According to Sadler-Smith (1999b) dependent learners prefer teacher-directed, highly structured courses with explicit explanations and assignments. Dependent learners prefer lectures, tutorials, and direct instruction. Collaborative learners prefer discussion-oriented classes, collaborative assignments, and group projects. They favor role play, simulations, and collaborative group work. Independent learners prefer to learn independently, with little interaction with the instructor or fellow students. The instructor is simply considered as a resource. They prefer autonomous methods such as online learning or computer-based learning (Sadler-Smith & Riding, 1999).

A well-know learning preference test is the VARK (Visual, Auditory, Read/ Write, Tactile/Kinesthetic) questionnaire that was developed by Neil D. Fleming at Lincoln University, Canterbury, New Zealand, in 1995. This tool focuses on the modal preferences for learners and instructors. It allows finding a better match between teaching and learning styles. Fleming identified visual learners as those who prefer to use graphs, charts, and flow diagrams in their learning. They prefer to learn by picturing

information. Auditory learners prefer to hear explanations and favor talking their way through using sound, or voices. Read/write learners prefer to learn through textbooks or printed materials. They prefer to receive information through written format. Kinesthetic learners prefer to learn through experience. The learners want to use all their senses, including touch, hearing, taste, smell, and sight for their learning experiences (Rosenfeld & Rosenfeld, 2004; Zapalska & Brozik, 2006).

Learning preference is basically a student's preferred way of processing information while learning. Learning preference is not "good" or "bad," but rather a matter of fit between learner and instructor or learner and material. Learning preference is modifiable and flexible, so learners are not stuck with certain styles unless they want to be. Learning preferences are not fixed, and learners may switch among styles (Sternberg & Zhang, 2005).

Learning and Cognitive Styles

There are many different definitions of learning style, cognitive style, and learning preference. However, the terms learning style and cognitive style are often used interchangeably throughout the literature as well as within this research. However, it is important to note how they are viewed differently within the psychology and educational fields. Cognitive styles can be defined as consistent preferences for organizing and processing information (Liu & Ginther, 2007; Riding & Cheema, 1991; Riding & Rayner, 1998). Ausburn and Ausburn (1978) argued that cognitive styles have three important properties. They asserted that first, cognitive style has generality and stability across tasks and over time. Thus cognitive style is resistant to change. The second

property is relative independence from traditional measures of general ability. The third property is the relationship of motivation with cognitive style. Cognitive styles have either positive or negative relationships with motivation or academic achievement.

Sadler-Smith (1996b) asserted that cognitive styles and learning styles are distinct and have different fundamental characteristics. Cognitive style is " a distinctive and habitual manner of organizing and processing information" (Sadler-Smith, 1996b, p. 186), whereas learning style is "a distinctive and habitual manner of acquiring knowledge, skills or attitudes through study or experience" (Sadler-Smith, 1996b, p. 186). Sadler-Smith also articulated the differences of cognitive strategy, learning strategy, with cognitive style, learning styles, and learning preferences. Cognitive strategy was defined as "a plan of action adopted in the process of organizing and processing information" (p. 186). Learning strategy was defined as "a plan of action adopted in the acquisition of knowledge, skills or attitudes through study or experience" (p. 186). Sadler-Smith (1996b) depicted the differences of cognitive style, learning style, and learning preferences using the onion model shown in Figure 3.

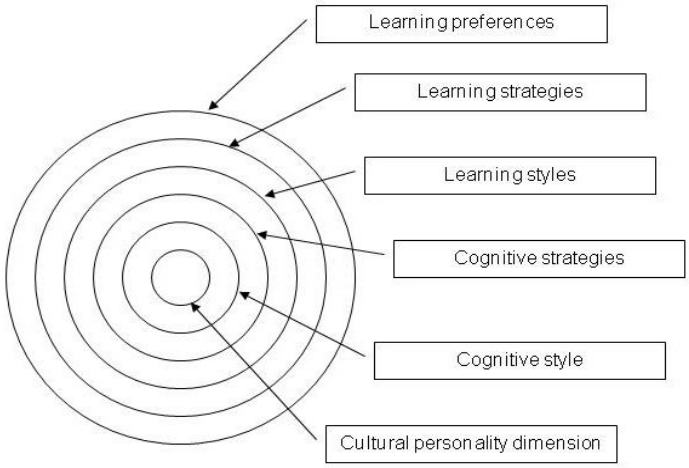


Figure 3. The relationship of learning preference, learning styles, and cognitive styles (Sadler-Smith, 1996b, p. 186)

Riding and Rayner (1998) defined cognitive styles as an individual's fixed characteristics relating to methods of information processing and organization. Similar to the construct of cognitive style, learning style refers to "characteristic cognitive, affective, and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1979, p. 4). Sternberg and Zhang (2005) asserted that learning styles are generally seen as dealing with preferred ways of learning material (e.g., orally, visually, kinesthetically). Learning styles are not "good" or "bad" but rather matters of fit between learner and instructor or learner and material. They are preferences, not abilities. Learning styles are socialized, and are shaped and learned through social interaction (Sternberg & Zhang, 2005; Turville, 2008).

Barmeyer (2004) defined learning styles as "the individual, natural and preferred way of a person to treat information and feelings in a certain learning situation which will influence his decisions and behaviors" (p. 578). Zapalska and Brozik (2006) defined

learning styles as "a preference or predisposition of an individual to perceive and process information in a particular way or combination of ways" (p. 327). Based on these several different definitions, in the present research, learning style was viewed as a preference or disposition for using learning materials or preferred ways of dealing with information.

Several comprehensive reviews of research in cognitive styles and theories are available in the literature. Ausburn and Ausburn (1978) focused on the information perception and processing nature of cognitive styles, their stability over time and tasks, and their implications for instructional design. Witkin, Moore, Goodenough, and Cox (1977) defined cognitive style as the individual way a person perceives, thinks, learns, solves problems, and relates to others. Riding and Rayner (1998) defined cognitive styles as "an individual's preferred and habitual approach to organizing and representing information" (p. 8). Ford, Wilson, Foster, Ellis, and Spink (2002) defined cognitive styles as "tendencies displayed by individuals consistently to adopt a particular type of information processing strategy" (p. 728). Hays and Allinson (1994, 1998) defined cognitive style as the way in which people perceive stimuli and how they use this information. In the present research, learning styles and cognitive styles were used interchangeably. Learning style was viewed as the process of perceiving, organizing, and retrieving information in learning. Learning preference was viewed as a learning predisposition or preferred way of learning acquisition.

Witkin's Field-Dependence and Field-Independence Styles

Witkin, Moore, Goodenough, and Cox (1977) found that people's style of cognition is stable and represents part of their fundamental thought patterns. According

to these researchers, field-dependents perceive things as a whole, make broad and general distinctions among concepts, rely on contexts or situations, and learn material in a social context. Field-dependents possess social and interpersonal skills with great emotional openness in communication with others. They also develop interpersonal skills. Comparison of Witkin's field-dependents to Kolb's learning model indicates that field-dependents are similar to individuals who have Concrete Experience (CE) abilities. CE-style learners are fully open when they experience new things without bias, grasp figurative representation from immediate experiences, and connect themselves to the outer world quickly (Kolb & Kolb, 2005; Nisbett & Miyamoto, 2005; Witkins et al., 1977; Yamazaki, 2005).

Witkin's field-dependence/field-independence cognitive styles have been related to culture. Nisbett, Peng, Choi, and Norenzayan (2001) have asserted that the field-dependent cognitive style is related to collectivist cultures, such as traditional Asian cultures, while the field-independent cognitive style is related to Western culture. Field-dependent characteristics are similar to Nisbett and his colleagues' (2001) holistic styles. Holistic and analytic cognition styles are also related to culture and system of thought. Nisbett et al. (2001) found East Asians to be holistic, attending to the entire field and assigning causality to it, using little categorization and formal logic, and relying on "dialectical" reasoning. Westerners were found to be more analytic, paying attention primarily to objects and the categories to which they belong and using rules, including formal logic, to understand their behavior.

According to researchers (Nisbett et al., 2001; Witkin et al., 1977; Yamazaki, 2005) field-independents perceive objects analytically, tend to be more adept at

structuring and organizing information analytically, develop impersonal skills, favor a hypothesis-testing approach, use internal motivation and goals, and prefer to work alone. Field-independents are not easily influenced by existing structure and tend to perceive objects as detached from background or field. Field-independents have similar characteristics of Nisbett's (Nisbett, 2004; Nisbett et al., 2001) analytical thought process. Analytics prefer a step by step, sequential learning pattern rather than a global one, have strong analytical and discrete abilities, and are detail-oriented. Field-independence also appears to be related to the Abstract Conceptualization (AC) abilities of Kolb's model (Kolb & Kolb, 2005). AC-style individuals learn by relying on abstract concepts and symbolic representation through logical and analytical cognition (Yamazaki, 2005). A summary of field-dependent and field-independent styles are shown in Table 18.

Table 18

Characteristics of Field-Dependence and Independence

Field-Dependent	Field-Independent
Rely on the whole perceptual field	Perceive objects as separate from their fields
Look at the global context	More easily extract an item from the field and solve new problems presented and organized in different contexts
Search for information from facial cues	Dependent more on their own values and standards
Spectator approach to learning	Hypothesis testing approach
Focus on external frame of reference	Inner directedness
Socially oriented	Individual oriented
Perceive complex stimulus globally as a gestalt.	Perceive complex stimulus analytically
Less good at analytic activity	Good at analytic activity

Sources: Garger & Guild, 1984; Pithers, 2000; Witkin, Moore, Goodenough, & Cox, 1977

Pask's Styles

According to Pask and Scott (1972, 1973), people process information using either holistic or analytic (serialistic) approaches. They claimed that holists tend to adopt a global approach to learning, examine interrelationships between objects and learning topics, and concentrate on broad conceptual overview rather than detailed content. By contrast, serialists tend to use predominantly logical reasoning, examine one subject at a time, concentrate on each topic a separate ways, favor abstract activities, and prefer detail and logical sequences in learning materials. Holists tend to perform several things at the same time, while serialists prefer to do one thing at a time (Ford, Wilson, Foster, Ells, & Spink, 2002). Pask and Scott's (1973) holist/serialist typology appears conceptually related to both Witkins's (1977) field dependence/independence and Nisbett's (2004) holistic /analytic cognition, and could have similar cultural implications.

Kolb's Experiential Learning Model

Kolb's experiential learning model (Kolb, 1984; Kolb & Kolb, 2005) has been widely used in academic research for the last few decades along with Witkin's field dependence/field independence cognitive theory. It has been successfully applied to ascertain the differences in learning styles of students across disciplines as well as across cultures (Auyeung & Sands, 1996; De Vita, 2001; Jaju, Kwak, & Zinkhan, 2002; Yamazaki, 2005). Kolb's learning styles model proposes four learning types, and each type in the model is characterized as abilities that a learner possesses: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE). The model requires orientations that are bipolar in

direction: active and reflective, concrete and abstract. Two composite scores in *Kolb's Learning Style Inventory* (LSI) indicate the extent of emphasizing abstractness over concreteness (AC-CE) and action over reflection (AE-RO). This orientation results in the four dimensions of learning activities (Kolb & Kolb, 2005; Mainemelis, Boyatzis, & Kolb, 2002). Kolb used these terms to describe the four learning dimensions or styles: diverging (CE/RO), assimilating (AC/RO), converging (AC/AE), and accommodating (CE/AE). Kolb's learning styles model is shown as Figure 4.

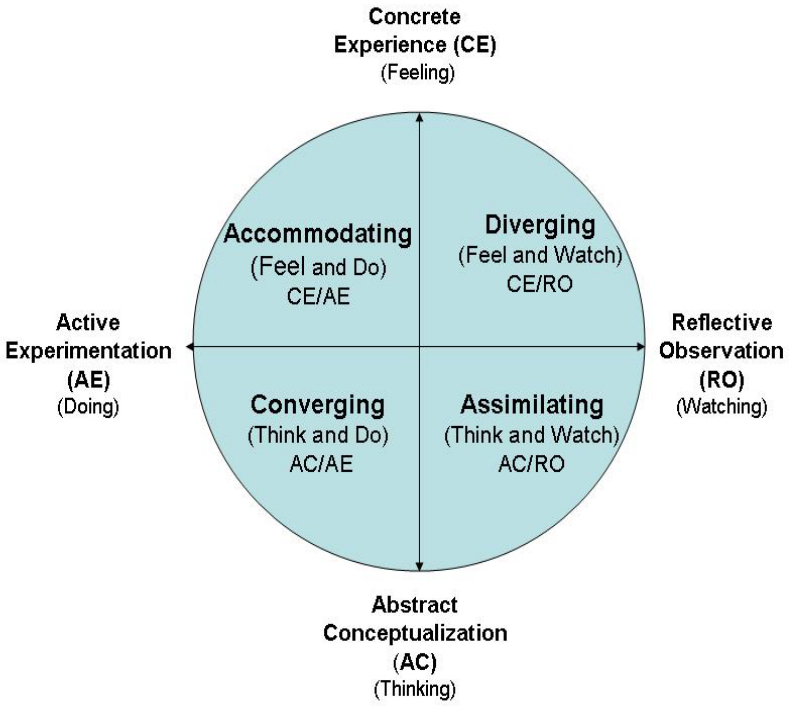


Figure 4. The model of Kolb's experiential learning styles

Sources: Reproduced based on Healey & Jenkins, 2000; Kolb & Kolb, 2005; Mainemelis, Boyatzis, & Kolb, 2002; Yamazaki, 2005

The characteristics of Kolb's four learning styles are:

1. Diverger (Feeling and Observing – CE/RO): Divergers tend to "perceive information concretely (CE) and process it reflectively (RO)" (Jaju, Kwak, & Zinkhan, 2002, p. 51). Their strength is imaginative ability. They prefer watching rather than doing. Divergers perform better in situations that need to create ideas, such as a brainstorming session. Divergers have broad cultural interests and like to gather information. They are imaginative and emotional individuals. They prefer to work in groups and to listen with an open mind, and to receive personalized feedback (Kolb & Kolb, 2005).

2. Assimilator (Observing and Thinking – AC/RO): Assimilators "perceive information abstractly (AC) and process it reflectively (RO)" (Jaju, Kwak, & Zinkhan, 2002, p. 51). They learn by watching and thinking. They prefer accurate information, certainty, expert opinion, and detailed and stable theoretical knowledge. Their strength is creating theoretical models. They excel in procedures, analysis, inductive reasoning, and in assimilating unrelated facts into a combined explanation. They are more interested in abstract concepts, logical theories and clear explanation than in learning practical values. Assimilators prefer lectures, reading, exploring analytical models, and spending time creating theoretical models (Healey & Jenkins, 2000; Kolb & Kolb, 2005).

3. Converger (Doing and Thinking – AC/AE): Convergers tend to "perceive reality through abstract conceptualization (CE) and process it through active experimentation (AE)" (Jaju, Kwak, & Zinkhan, 2002, p. 51). Their strength lies in the practical application of ideas. They learn by doing and thinking. Convergers value practical application rather than theoretical knowledge. Convergers are more attracted to

technical tasks and problem solving than to social or interpersonal issues. Convergers prefer to deal with things, to experiment with new ideas, and to work with practical applications rather than with people (Healey & Jenkins, 2000; Kolb & Kolb, 2005).

4. Accommodator (Doing and Feeling – CE/AE): Accommodators "perceive reality through concrete experience (CE) and process it through active experimentation (AE)" (Jaju, Kwak, & Zinkhan, 2002, p. 51). The strength of accommodators is in doing things, carrying out plans and experiments and involving themselves in new experiences. They tend to be risk-takers and excel to adapting immediate circumstances. Accommodators use intuition when they solve problems, utilize a trial-and error manner, and enjoy teaching others. The accommodator learning style relies on 'hands-on' experiences and often uses intuition rather than logic. Accommodators prefer to take a practical, experiential approach. They are attracted to new challenges and experiences, and to carrying out plans (Healey & Jenkins, 2000; Kolb & Kolb, 2005).

Kolb's learning styles model has conceptual relationships to several other learning cognitive styles and cultural dimensions. These are summarized in Table 19.

Table 19

Conceptual Relationships between Cultural Dimensions and Learning Styles

	Learning/Cognitive styles			
Cultural Dimensions Researchers	Concrete Experience "Feeling" (CE)	Abstract Conceptu-alization "Thinking" (AC)	Reflective Observation "Reflecting" (RO)	Active Experimentation "Acting" (AE)
Hofstede (1986) Hofstede & Hofstede (2005)			Strong uncertainty avoidance	Weak uncertainty avoidance
Hall (1976)	High-context culture	Low-context culture		
Witkin, et al. (1977)	Field-dependent	Field-independent		
Pask (1973)	Global	Analytic		

Sources: De Vita, 2001; Ford, Wilson, Foster, Ellis, & Spink, 2002; Jaju, Kwak, & Zinkhan, 2002; Yamazaki, 2005

CHAPTER III

METHODOLOGY

Research Design

This research used a descriptive study that combined both force-choice and open-ended questions and with quantitative techniques to identify learning preferences, issues, benefits, and recommendations of Asian students taking online courses at Oklahoma State University. According to Gay and Airasian (2000), "descriptive study is used to obtain information concerning the current status of the phenomena to describe 'what exists' with respect to variables or conditions in a situation" (p. 275). One type of descriptive study is survey research. A survey is often used to obtain information about the current status of a population on one or more variables (Gay, 1987). According to Babbie (2004), there are four types of survey: (1) self-administrated questionnaires; (2) face-to-face interviews; (3) telephone surveys; and (4) electronic surveys.

To quantify the demographic profiles of its sample and identify online learning preferences of Asian students on structured response questions, this research used a self-administered electronic survey. Electronic surveys have several advantages such as speedy responses, low cost, ease of scoring for most items, and quick data collection (Gay, Mills, & Airasian, 2006).

To discover personal online learning problems, benefits, and recommendations of Asian students for improvement of online learning, this study used open-ended questions

on the survey questionnaire.

Variables

In this study, two major groups of variables were defined. One group was demographic variables; the other was online learning preference variables. Demographic variables were : (1) gender, (2) age group, (3) nation of origin, (4) number of online learning course taken, (5) level of technology skill, (6) academic major, and (7) level of degree program. Online learning preference variables were Henderson's 15 cultural dimensions. These fifteen variables were: (1) epistemology, (2) pedagogical philosophy, (3) underlying psychology, (4) goal orientation, (5) instructional sequencing, (6) experiential value, (7) role of instructor, (8) value of errors, (9) motivation, (10) structure, (11) accommodation of individual differences, (12) learner control, (13) user activity, (14) cooperative learning, and (15) cultural sensitivity (see Figure 2 in Chapter 2, p. 56). Three additional variables were measured with open-ended survey questions. These were online learning problems, benefits, and recommendations for improving online learning.

Population and Sample

A population is the group of individuals that interests the researcher (Gay, Mills, & Airasian, 2006). The selected population is the one to which the researcher wishes to generalize the results of the study. This group is referred to as the target population (Gay & Airasian, 2000). In this study, the target population was Asian students who took online courses at Oklahoma State University in the United States. A sample is a

representative group of a larger population (Gay & Airasian, 2000). The sample for this study was a group of Asian students who had experienced online learning courses at Oklahoma State University and also agreed to participate in the study. In this study, Asian students were limited to East Asian students who were Chinese (including Taiwanese), Korean, or Japanese. The sampling criteria were: (1) the subject was born in one of the selected Asian countries and was raised to at least 18 years old in the Asian country; (2) the subject was currently studying either at the undergraduate or graduate level at Oklahoma State University; and (3) the subject had experienced at least one online course at Oklahoma State University. To access the participants, the researcher obtained permission from the director of the Oklahoma State University (OSU) International Student Association to use a mailing list of international students. The target Asian populations at OSU are shown in Table 20.

Table 20

Target Asian Student Populations at Oklahoma State University

Country	Number of students
China, P. R	175
Korea, S	107
Japan	85
Taiwan	20
Total	387

* Source: Oklahoma State University international student statistics. Spring, 2008 enrolled students

Instrumentation

An instrument is a test or tool used for data collection (Creswell, 2003). The researcher could not find an appropriate research instrument to measure online learning preference for this study. The researcher developed an instrument using the form of a survey questionnaire. The survey questionnaire is attached in APPENDIX A. The questionnaire was composed of three parts: (1) demographic profiles; (2) online learning preferences; and (3) online learning problems, benefits, and recommendations for improvement of online learning. To collect the desired demographic data, forced-choice questions were asked. To measure Asian students' online learning preferences, the researcher used 60 structured questions based on Henderson's multiple cultural model with self-identified five-point Likert-type scale responses. To discover the participants' personal problems in online learning experience, benefits, and recommendations, open-ended questions were asked.

A newly developed instrument is concerned with the content, construct, and criterion validity and with reliability (Kerlinger, 1973). These issues were addressed for the questionnaire developed for this study as described below.

Validity

Validity refers to the degree to which a test measures what it is supposed to measure (Gay, Mills, & Airasian, 2006). To establish validity for the question items for the present study, both content and construct validity were addressed. This was done with statistical field tests and a pilot study.

Construct validity: Construct validity is the most important validity because it addresses the fundamental theory underlying an instrument or questionnaire (Gay, 1987). Gay, Mills, and Airasian (2006) defined construct validity as "the degree to which a test measures an intended hypothetical construct" (p. 137). Construct validity asks "What is the test really measuring?" (Gay & Airasian, 2000, p. 167). To establish construct validity of the learning preferences questionnaire used for this study, the researcher constructed the items based on Henderson's multiple cultural model theory, by applying the model's variables of learning theory, epistemology, educational philosophy, role of instructor, experiential values, motivation, and accommodation of individual differences (see APPENDIX B).

Content validity refers to the "degree to which a test measures an intended content area" (Gay, Mills, & Airasian, 2006, p. 134). Content validity requires both item validity and sampling validity. Item validity is concerned with whether the test items are relevant to the measurement of the intended content area. Sampling validity focuses on "how well the test samples the total content area" (Gay, Mills, & Airasian, 2006, p. 134). To begin questionnaire construction, the researcher developed 94 items to cover or sample the 15 dimensions of Henderson's multiple cultural model. To establish content validity, two field tests were conducted with a total of 19 graduate students majoring in Education. Correlation coefficients were calculated for the individual test items to scale scores. Correlation determines the degree of relationship between two or more existing quantifiable variables (Gay, 1987). It means that "scores within a certain range on one measure are associated with scores within a certain range on another measure" (Gay, 1987, p. 316). Correlation does not imply that one measured phenomenon is the cause of

the other. The correlation coefficient simply provides an estimate of how "related" two items are to each other or how test items are related to total scores.

Henderson's multicultural model has 15 dimensions and each dimension has two tendencies of opposite polar ends. This creates a total of 30 tendencies. From among 94 original test items, 60 high-correlation items were selected for sampling validity, representing two items for each of the 30 tendencies (two per dimension) (see APPENDIX B). To establish content validity of test items for each tendency, the correlation (r) for the individual items in each tendency with the tendency or scale score was calculated (see Table 21). The 60 items had correlations to total scores that were distributed as follows: 0.90 to 1.00 - - 16 items, 0.80 to 0.89 - - 36 items, 0.70 to 0.79 - - 5 items, and 0.60 to 0.69 – 3 items. As shown Table 21, correlations of each item to total score scale was quite strong. This strong relationship indicated that content validity of instrument was solid (Gay, 1987).

Table 21

Correlation of Individual Scale Items to Total Score for Scale

Scale	First Item		Second Item	
	Item	r	Item	r
Objectivism	Item 1	0.84	Item 2	0.87
Constructivism	Item 3	0.87	Item 4	0.88
Instructivism	Item 5	0.81	Item 6	0.82
Constructivism	Item 7	0.83	Item 8	0.83
Behavioral theory	Item 9	0.87	Item 10	0.85
Cognitive theory	Item 11	0.75	Item 12	0.86
Reductionism	Item 13	0.84	Item 14	0.88
Constructivism	Item 15	0.91	Item 16	0.91
Sharply focused	Item 17	0.87	Item 18	0.92
Unfocused	Item 19	0.81	Item 20	0.60
Abstract	Item 21	0.89	Item 22	0.90
Concrete	Item 23	0.89	Item 24	0.81

Table 21 Continued

Scale	First Item		Second Item	
	Item	r	Item	r
Didactic	Item 25	0.89	Item 26	0.85
Facilitative	Item 27	0.87	Item 28	0.92
Instructor proof	Item 29	0.81	Item 30	0.90
Easily modifiable	Item 31	0.87	Item 32	0.86
Errorless learning	Item 33	0.71	Item 34	0.83
Learning from experience	Item 35	0.67	Item 36	0.77
Extrinsic	Item 37	0.81	Item 38	0.83
Intrinsic	Item 39	0.82	Item 40	0.84
Non-existent	Item 41	0.94	Item 42	0.94
Multifaceted	Item 43	0.92	Item 44	0.93
Non-existent	Item 45	0.81	Item 46	0.83
Unrestricted	Item 47	0.92	Item 48	0.93
Mathemagenic	Item 49	0.88	Item 50	0.67
Generative	Item 51	0.88	Item 52	0.88
Unsupported	Item 53	0.94	Item 54	0.92
Integrated	Item 55	0.87	Item 56	0.87
Non-existent	Item 57	0.79	Item 58	0.70
Integrated	Item 59	0.92	Item 60	0.93

The validity of each of the 15 Henderson dimensions also was checked by calculating two total correlations for each tendency. In detail, the instrument was composed of 15 dimensions. Each dimension consisted of two tendencies. Each tendency was measured by two question items. For example, the epistemology dimension was composed of the objectivism tendency and the constructivism tendency (see Table 22). The objectivism tendency was measured by two question items. To check dimension validity, correlations were calculated for two tendencies. Table 22 shows the correlation of dimensions to individual test items. Among 30 dimensions, correlations were distributed as follows: 0.90 to 1.0 – 1 dimension, 0.80 to 0.89 - - 12 dimensions, 0.70 to 0.79 - - 11 dimensions, 0.60 to 0.69 – 3 dimensions, 0.50 to 0.59 - - 1 dimension,

and 0.40 to 0.49 – 2 dimensions. This result indicated that validity for each dimension is sound.

Table 22

Correlation of Individual Items to Total Score for Dimension

Correlations	First Scale		Second Scale	
	Scale	r	Scale	r
Epistemology	Objectivism	0.82	Constructivism	0.84
Pedagogical philosophy	Instructivism	0.72	Constructivism	0.81
Underlying psychology	Behavior. theory	0.85	Cognitive theory	0.86
Instructional sequencing	Reductionism	0.60	Constructivism	0.83
Goal orientation	Sharply focused	0.75	Unfocused	0.77
Experiential value	Abstract	0.68	Concrete	0.43
Instructor role	Didactic	0.90	Facilitative	0.89
Program flexibility	Instructor proof	0.77	Easily modify	0.47
Value of errors	Errorless learning	0.84	Experience	0.77
Origin of motivation	Extrinsic	0.67	Intrinsic	0.75
Individual difference	Non-existent	0.79	Multifaceted	0.88
Leaner control	Non-existent	0.73	Unrestricted	0.79
User activity	Mathemagenic	0.83	Generative	0.77
Cooperative learning	Unsupported	0.79	Integrated	0.59
Cultural sensitivity	Non-existent	0.80	Integrated	0.83

Exploratory Factor Analysis

After establishing both construct and content validities of the study's questionnaire, the researcher also conducted exploratory factor analysis to explore the structure of the questionnaire. Exploratory factor analysis determines the underlying structure of an instrument. The results revealed that Henderson's multiple cultural model divides into three broad groups of items.

Factor analysis is often used to identify components underlying a large set of variables or to reduce large numbers of variables to smaller groups (Suhr, 2008). Factor analysis can be approached as exploratory or confirmatory. Exploratory factor analysis is used to "gain insight into the structure or underlying processes that explain a collection of variables" (Pohlmann, 2004, p. 14). Confirmatory factor analysis is used "when a researcher has a number of well-articulated theories about the latent structure of a set of measured variables and wishes to test how well those models fit the data" (p.14).

According to Kachigan (1991), one of the difficult tasks in factor analysis is determining the factors. To determine factors, eigenvalues, scree plot test, or Kaiser's Varimax criterion are often used. An eigenvalue is the number that represents the amount of variance accounted for in the factor (Kachigan, 1991). As a general rule, a researcher attempts to interpret only factors that have eigenvalues greater than 1. A scree plot test is a visual plot of eigenvalues against all factors. The Kaiser's Varimax rotation helps to make interpretation of factors easier.

To determine the number of factors in a data set, eigenvalues are calculated and a scree plot is created. For this study, the initial "eigenvalues that are greater than one" rule suggested 18 factors. These eigenvalues were: 10.883, 5.421, 3.728, 3.098, 3.013, 2.438, 2.156, 2.063, 1.908, 1.706, 1.531, 1.334, 1.259, 1.224, 1.156, 1.085, 1.056, and 1.022. These factors accounted for a total cumulative percent of variance of 76.804%. Although eigenvalues are an important concept of determination of factors, 18 components (factors) are too many factors for the 60-item survey instrument. To decide the number of factors to retain, the scree plot was also generated. The scree plot is a

graph of the eigenvalues against all the factors (Kachigan, 1999). The scree plot of these data is shown in Figure 5.

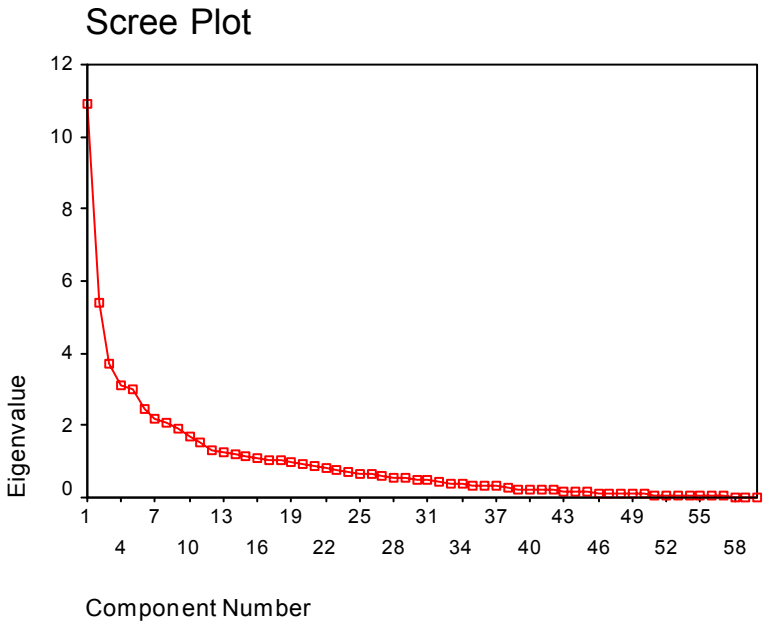


Figure 5. Scree plot of rotated Varimax component matrix data of 60 items survey instrument

The scree plot showed that 18 eigenvalues were greater than 1. For ease of interpretation the researcher manually reduce the number of factors. Deciding the number of factors is based on a certain amount of subjective judgment of the researcher (Field, 2005). For this study, a three factor solution was used based on the drop in the scree plot to describe the structure of the instrument's underlying variables. The factor loadings were rotated using the Varimax rotation method. Varimax method is an orthogonal rotation (Pohlmann, 2004), which means the factors are assumed to be uncorrelated with one another. Rotation does not actually change any variance but makes the interpretation easier (Kachigan, 1991). The result of factor analysis is shown in Table 23, representing the underlying structure of the measured variables (items). Factor 1 grouped 26 items,

Factor 2 consolidated 21 items, and Factor 3 contained 13 items. The three factor extraction, selected as a simple basic model of the data, accounted for 33.39% of the variance using the Varimax rotation method. The factors accounted for the following amount of variance: Factor 1 - - 14.38%, Factor 2 - - 11.27%, and Factor 3 - - 7.74%. Based on the survey instrument, the researcher named the factors as follows: 1) behavioral learning or educational preference; 2) humanism or self-directed learning preference; and 3) liberal education or learning preference. Factor 1 (see Table 23) items represented behavioral learning theory tendency except Q11, Q1, and Q2. Factor 2 represented humanistic or self-directed learning principles. Most items of Factor 3 represented liberal educational principles except Q54 and Q36.

Each factor group had a couple of unrelated items that appeared, but this was expected, since this study was exploratory. In addition, the instrument has never tested the structure of a set of measured variables and theoretical variables. Thus this phenomenon is acceptable, but it is recommended that further research should attempt to refine the instrument for better structure.

Table 23

Items and Factor Loadings in 3 Factor Extractions for Online Learning Preference

Items	Questions	Factors		
		1	2	3
Q13	I prefer clearly stated learning objectives	0.74		
Q41	I prefer well-organized learning courses	0.69		
Q17	I prefer to learn step-by-step	0.67		
Q10	I value learning outcomes	0.67		
Q9	I prefer that instructor specify the desired learning performance in advance	0.66		
Q42	I prefer a well-planned learning curriculum	0.65		
Q26	I believe an instructor should be an expert on the subject matter	0.62		
Q11	I value the learning process	0.61		
Q14	I prefer predetermined learning goals	0.59		
Q27	I believe the role of the instructor is for guiding the learning	0.55		
Q44	I prefer to have access to a wide array of supplementary learning materials	0.55		
Q37	I prefer well-defined learning projects	0.52		
Q25	I believe the role of the instructor is providing knowledge	0.52		
Q29	I prefer to repeat my learning until I can generate correct answers	0.49		
Q46	I prefer the instructor gives me the deadline for my assignments	0.48		
Q1	I prefer to pursue theoretical knowledge	0.47		
Q33	I value saving time and money	0.46		
Q28	I believe the role of the instructor is as a mentor	0.45		
Q4	I prefer to acquire factual knowledge	0.45		
Q20	I prefer to learn general principles first and specific knowledge later	0.42		
Q24	I prefer to learn through practical examples	0.41		
Q18	I prefer to learn in detail	0.40		
Q2	I prefer to pursue knowledge for its own sake	0.38		
Q45	I prefer the instructor directs my learning	0.33		
Q5	I prefer to listen to lectures	0.23		
Q57	I believe learners' cultural backgrounds really affect learning achievement	0.21		
Q40	I prefer flexible learning schedules		0.70	
Q16	I prefer broad and open-ended learning goals		0.65	
Q39	I prefer self-paced learning		0.64	
Q15	I prefer flexible learning goals		0.62	
Q35	I enjoy a variety of learning activities such as threaded discussions or other collaborative activities with students and the instructor.		0.62	
Q48	I prefer to assess my own learning		0.58	
Q47	I prefer to manage my own learning		0.56	
Q56	I prefer to cooperate to my classmates		0.54	
Q60	I am ready to listen attentively others' opinions regardless their cultural backgrounds		0.47	
Q51	I prefer to be actively involved in my own learning		0.47	
Q55	I prefer to perform class projects in small groups		0.46	
Q3	I prefer to obtain practical knowledge		0.42	
Q8	I prefer to learn through real life experiences		0.42	

Table 23 continued

Items	Questions	Factors		
		1	2	3
Q43	I prefer to use a variety of learning materials		0.41	
Q23	I prefer to learn by doing		0.41	
Q59	I am ready to accept cultural differences of both the instructors and classmates		0.40	
Q58	I am interested in my classmates' cultural backgrounds		0.37	
Q19	I prefer to learn in an unstructured way		0.36	
Q12	I value reorganizing my thoughts rather than changing my external behavior		0.34	
Q52	I prefer to initiate my own learning		0.33	
Q7	I believe that learning is derived from one's individual and social experience		0.32	
Q53	I prefer to work by myself without discussion with my classmates			0.70
Q34	I value earning school credits more than I value enjoying the class			0.70
Q54	I prefer individual learning			0.68
Q22	I prefer to learn from theory rather than experience			0.65
Q30	I do not want to make any mistakes in my tests			0.53
Q21	I prefer to learn from textbooks rather than other resources			0.52
Q32	I believe that I can learn through my mistakes			-0.49
Q49	I prefer that the instructor controls my entire learning process			0.47
Q38	I prefer fixed learning schedules			0.38
Q50	I prefer to have class learning tasks rigidly specified in advance on the class syllabus			0.38
Q31	I believe making a mistake is just a part of the learning process			-0.35
Q36	I enjoy online learning itself			0.30
Q6	I prefer that the instructor leads the class			0.27

Reliability

Reliability refers to "the degree to which a test consistently measures whatever it is measuring" (Gay, Mills, & Airasian, 2006, p. 139). It refers to the consistency of a measure. There are several different types of reliability: internal consistency, test-retest reliability, and inter-rater reliability. Internal consistency is measured based on the correlation among the variables of an instrument (Gay, 1987). It assesses the consistency of results across items within a test (Gay, Mills, & Airasian, 2006). This type of reliability was used for the questionnaire developed for this study.

To establish internal consistency of this instrument, Cronbach's alpha was measured. Cronbach's alpha is "a test reliability technique that requires only a single test administration to provide a unique estimate of the reliability for a given test" (Gliem & Gliem, 2003, p. 3). Cronbach's alpha ranges in value from 0 to 1 and describes the coefficient of reliability. It is unlikely that a single item can fully represent a complex theoretical concept or any specific attribute for that matter. Thus, identifying the degree of internal reliability for a complete test is important (Gliem & Gliem, 2003). The obtained alpha score for the questionnaire was 0.90 with 82 subjects and 60 question items. This reliability measure indicated that the items on the questionnaire had high internal consistency.

Pilot Study

After the initial construction and validity/reliability field testing of the questionnaire, a pilot study was conducted with representative Asian students to further establish content validity and reliability. The pilot study was performed with three different groups – Chinese (2 graduate students), Korean (3 graduate students), and Japanese (2 undergraduate students). The feedback from the pilot study included the following points:

1. The explanation of questionnaire items was too long.
2. Several similar questions existed among the 60 items.
3. To help understanding of survey items, categorization or grouping of items was suggested.

4. Several educational jargon terms, such as "error-free", "collaborative learning" , and "well validated knowledge" were not familiar to Asian students.

Based on these feedback suggestions, the researcher changed several items to use acceptable words for Asian students and also rephrased similar question items. The sentences of the survey items were shortened to avoid complexity and to facilitate answering of the questions. The dimensions were grouped with short explanations to help the participants' understanding.

Data Collection Procedures

In order to collect data, the researcher constructed an online survey questionnaire using Oklahoma State University (OSU) virtual space. It was posted at http://frontpage.okstate.edu/coe/esthermorris/ (see APPEMDIX A). After Institutional Review of Board (IRB) approval from Oklahoma State University (see APPENDIX C), the survey questionnaire was activated at the OSU website. After activation of the survey web site, the researcher contacted the OSU International Students and Scholars manager, Mr. Tim Huff, via e-mail to initiate sending an invitation to participate to the students in the target population (see APPENDIX D). Mr. Huff sent an e-mail directly to the OSU target population with the survey questionnaire link using the listserv of international students' database. While the list of available international students was not as current as it could have been, it was the only listing available for this research. The survey was taken anonymously to protect international students' privacy. After the initial survey was

initiated, 10 days later a follow up e-mail was sent to participants to encourage participation and hopefully increase the survey response rate (see APPENDIX E).

The data were collected electronically by means of the questionnaire located on the researcher's website on the OSU server. The participants responded voluntarily and anonymously after reading a consent document and then clicking on an "Agree to Participate" link to the questionnaire. The data were downloaded through the OSU web server for analysis.

Data Analysis

For this study, descriptive statistics, factor analysis, t-test, and thematic analysis were employed. Descriptive statistics begin with

> "a set of data sometimes called a data set and attempt to convey the data by arranging it in a more interpretable form (e.g. by forming frequency distributions and generating graphical displays) and by calculating numerical indexes such as averages, percentile ranks, and measures of spread" (Johnson & Christensen, 2000, p. 360).

To explore the structure of the learning preference questionnaire developed for this study, exploratory factor analysis was conducted using a principal components analysis with a Varimax rotation. Factory analysis computes "the correlations among all the variables and then derives factors by finding groups of variables that are correlated highly among each other" (Gay, Mills, & Airasian, 2006, p.204).

To describe the demographic profile of the participants and their online learning preferences based on Henderson's multiple cultural model, descriptive statistics were used. To measure the participants' online learning preferences, a five-point Likert-type rating scale was utilized on the questionnaire's 60 items. The response score was calculated on the following scale:

1= strongly disagree

2= disagree

3= no preference

4= agree

5= strongly agree

To compare the preferences of learners with and without online learning experience, t-tests were used. A t-test is a comparison technique to determine "whether the means of two groups are significantly different at a given probability level" (Gay, Mills, & Airasian, 2006, p. 602).

To analyze the open-ended responses regarding online learning personal problems, benefits, and suggestions for improvement that were identified by the participants, thematic analysis was used.

CHAPTER IV

FINDINGS

Demographic Profile – Research Question #1

To construct the sample's demographic sample's profile, participants were asked to identify their gender, age, nationality, number of online learning course taken, level of technology, major, and level of degree program. The target population was 387 students from East Asian countries – specifically limited to China, Korea, Japan, and Taiwan. These 387 students were enrolled at OSU in the Spring, 2008 semester (see Table 20). Among the 387 individuals in the target population, 21% of them (N= 82) responded to the survey questions. Demographic data for the obtained sample are shown in Table 24.

Gender

Among the 82 total respondents, 47.6% (39 students) were males and 52.4% (43 students) were females.

Age Distribution

The age group of 18-20 years old comprised 13.4% (11 students) of the sample, age group 21-30 years old comprised 63.4% (52 students), age group 31-40 years old comprised 17.1 % (14 students), and age group 41-50 years old comprised 3.7% (3 students). Over 50 years old comprised 2.4% (2 students). The largest age group was

21-30. The minimum age respondent was 19 years old, while the maximum age respondent was 58 years old.

Nationality

Of the 82 participants, 81 persons self-identified their nation of origin: 47.6% (39 students) were Korean, 35.4% (29 students) were Chinese, 12.2% (10 students) were Japanese, and 3.7% (3 students) were Taiwanese. According to OSU international students' statistics, 387 (Chinese, Korean, Japanese, and Taiwanese) students enrolled in the academic year 2008, Spring. Among those 387 students, 175 students are Chinese, 107 students were Korean, 85 students were Japanese, and 20 students were Taiwanese (see Table 20). Among the respondents, Korean students were a greater percentage than Chinese students, due to data collections methods. The researcher used personal contacts in the Korean community to increase participation by Korean students. Only 3 Taiwan students participated, 3.7% of respondents, a reasonable match to the percentage of Taiwanese students in the target population.

Number of Online Learning Course Taken

Of the 82 respondents, 41.4% (34 students) responded that they had online learning experience, while 58.5% (48 students) of participants did not. It concerned the researcher that this question was ambiguous, or that some respondents did not perceive the concept of online course experience properly. In the present research, the definition of "online course" included both hybrid courses and complete online learning classes using Desire2Learn, BlackBoard, WebCT, and two-way broadcasting platforms.

However, this was not stated clearly on the instrument and many participants indicated after answering the questions that they had not operational definition of online learning courses. This was a weakness in the study.

Level of Technology

Regarding computer skills among the respondents, 81 out of 82 responded to the technical skills questions. Among the respondents, 22% (18 students) considered themselves to be novices, while the remaining 78% considered themselves "fairly skilled" (62%: 51 students) or "power users" (14.6%: 12 students).

Academic Major

The self-identified academic major was a write-in response on the questionnaire. As such, the response could not be summarized readily, as most responses were unique. Table 24 shows the classifications made by the researcher. Of the respondents 20.7% (17 students) were studying engineering or architecture, while 14.6% (12 students) were studying business and information sciences. While engineering and business students comprised the two largest groups of the sample, as shown in Table 24, students of many other majors participated in this survey. These majors also included biochemistry, molecular biology, fire and emergency management, animal science, interior design, apparel and merchandising, and hotel management.

Level of Degree Program

Degree level pursued (bachelor's, master's, or doctoral) identifies the degree which the respondent was currently studying to obtain. Of the respondents 41.5% (34 students) were undergraduate students studying for bachelor's degrees. The remaining respondents were graduate students studying for a master's degree (24.4%, 20 students) or doctoral degrees (32.9%, 27 students).

Table 24

Distribution of Demographic Variables (N=82)

Variables	Number	Percent
Gender		
Male	39	47.6
Female	43	52.4
Total	82	100.0
Age Distribution		
Less than 20	11	13.4
21-30	52	63.4
31-40	14	17.1
41-50	3	3.7
Over 50	2	2.4
Total	82	100.0
Nationality		
China	29	35.4
Japan	10	12.2
Korea	39	47.6
Taiwan	3	3.7
No Response	1	1.2
Total	82	100.0
Number of Online Learning Course Taken		
None	48	58.5
1-3	31	37.8
4-5	None	0
More than6	3	3.7
Total	82	100.0

Table 24 Continued

Variables	Number	Percent
Level of Technology		
Novice	18	22.0
Fairly skilled	51	62.2
Power user	12	14.6
Total	82	100.0
Academic Majors		
Agricultural Sciences	4	4.9
Arts and Sciences	8	9.8
Apparel design & Merchandising	8	9.8
Biochemistry & Molecular biology	3	3.7
Business	12	14.6
Engineering & Architecture	17	20.7
Education	6	7.3
Food & Nutritional Sciences / Human Environmental Sciences/ Hotel Management	12	14.6
Mathematics & Computer Sciences	5	6.1
Total	82	100.0
Level of Degree Program		
Bachelor degree	34	41.5
Master degree	20	24.4
Doctoral degree	27	32.9
No Response	1	1.2
Total	82	100.0

Online Learning Preferences of Asian students – Research Question #2

This analysis is composed of three sections. The first section describes online learning preferences of Asian students who had taken at least one online learning course. Among 82 participants, only 34 students had online learning experience and only these

34 participants were used in this analysis. The second section discusses learning preferences of Asian students who did not have any online learning experience. To compare perceived online learning preference of experienced and non-experienced groups, t-tests were performed. The third section discusses learning preferences of all participating Asian students regardless of their experiences. These results were derived from the entire sample's (N= 82) learning preferences regardless of online learning experiences.

Learning Preferences of 34 Asian Students with Online Learning Experience

To measure online learning preferences, 60 questions were asked. These 60 questions were intended to measure student learning preferences along the dimensions of Henderson's multiple cultural model. The multiple cultural model was composed of 15 dimensions. Fourteen dimensions were measured on a continuous bipolar scale extending between two extremes. Cultural sensitivity, the 15th dimension, placed the other 14 dimensions on a scale which measures their relevance to cultural integration. Each dimension was divided into two named polar tendencies. For example, the epistemology dimension was divided into a tendency toward objectivism, or oppositely, a tendency toward constructivism (see Figure 2). These two tendencies were each measured by two questions, giving a total of four questions for each dimension.

1. Dimension of Epistemology

To measure the epistemology dimension, four questions were asked. The epistemology dimension was made up two tendencies: objectivism and constructivism.

Each tendency was measured using two questions (see Table 25). The responses were entered on a five-point Likert scale.

The mean response of objectivism tendency was 3.86 with a standard deviation of 0.60. The mean of the constructivism tendency was 4.11 with a standard deviation of 0.87. The results indicated that Asian students preferred constructivism slightly more than objectivism as a learning preference (see Table 25).

Table 25

Question Items for Epistemology with Means and Standard Deviations

				Means	St. Dev.
D1	Epistemology	Objectivism	*When I take online learning courses,* 1. I prefer to pursue theoretical knowledge. 2. I prefer to pursue knowledge for its own sake.	3.86	0.60
		Constructivism	*When I take online learning courses,* 3. I prefer to obtain practical knowledge. 4. I prefer to acquire factual knowledge.	4.11	0.87

2. Dimension of Pedagogical Philosophy

The pedagogical philosophy dimension was composed of the opposing tendencies of instructivism and constructivism. The students entered their responses to each question on a five-point Likert scale. To measure this dimension, four questions were asked (see Table 26). Two of the questions measured the instructivism tendency while the other two questions measured the constructivism tendency. The mean of the responses on the instructivism questions was 3.76 with a standard deviation of 0.78. The mean of the constructivism responses was 3.92 with a standard deviation of 0.87. The results indicated that Asian students slightly preferred the instructivistic educational philosophy.

Table 26

Question Items for Pedagogical Philosophy with Means and Standard Deviations

				Means	St. Dev.
D2	Pedagogical philosophy	Instructivism	*When I take online learning courses*, 5. I prefer to listen to lectures. 6. I prefer that the instructor leads the class.	3.76	0.78
		Constructivism	*When I take online learning courses*, 7. I believe that learning is derived from one's individual and social experience. 8. I prefer to learn through real-life experiences.	3.92	0.87

3. Dimension of Underlying Psychological Theory

To quantify the underlying psychological theory dimension, four questions were asked. The dimension was divided into two opposing tendencies, behavioral theory and cognitive theory. The mean of the behavioral theory responses was 4.27, with a standard deviation 0.51, whereas the mean of the cognitive theory responses was 3.77 with a standard deviation 0.74 (see Table 27). This indicated that Asian students preferred learning instruction based on behavioral learning theory.

Table 27

Question Items for Underlying Psychology with Means and Standard Deviations

				Means	St. Dev.
D3	Underlying psychology	Behavioral theory	*When I take online learning courses,* 9. I prefer that instructor specify the desired learning performance in advance. 10. I value learning outcomes.	4.27	0.51
		Cognitive theory	*When I take online learning courses,* 11. I value the learning process. 12. I value reorganizing my thoughts rather than changing my external behavior.	3.77	0.74

4. Dimension of Goal Orientation

To measure the goal orientation dimension, four questions were asked. The dimension of goal orientation was divided into the opposing tendencies of sharply

focused and unfocused. Each tendency was measured using two questions as shown in Table 28. The mean of the results on the sharply focused goal orientation scale was 4.20 with a standard deviation of 0.61. Unfocused goal orientation tendency responses had a mean of 3.58 with a standard deviation of 1.02 (see Table 28). This result indicated that Asian students preferred clearly stated learning objectives with predetermined goals rather than broad and open-ended learning goals.

Table 28

Question Items for Goal orientation with Means and Standard Deviations

				Means	St. Dev.
D4	Goal orientation	Sharply focused	*When I take online learning courses,* 13. I prefer clearly stated learning objectives. 14. I prefer predetermined learning goals.	4.20	0.61
		Unfocused	*When I take online learning courses*, 15. I prefer flexible learning goals. 16. I prefer broad and open-ended learning goals.	3.58	1.02

5. Dimension of Instructional Sequence

The dimension of instructional sequence was divided into two opposing tendencies of reductionism and constructivism. To quantify the preference of instructional sequence, four questions were asked. Two questions measured reductionism and two questions measured constructivism as shown in Table 29. The responses were entered on a five-point Likert scale. The mean of the measured reductionism tendency was 4.22 with a standard deviation 0.61, while the mean of the measured constructivism tendency was 3.17 with a standard deviation 0.58. Asian students showed a higher score in reductionism with constrained and hierarchical learning compared to constructivism (see Table 29).

Table 29

Question Items for Instructional Sequence with Means and Standard Deviations

				Means	St. Dev.
D5	Instructional Sequence	Reductionism	*When I take online learning courses*, 17. I prefer to learn step-by-step. 18. I prefer to learn in detail.	4.22	0.61
		Constructivism	*When I take online learning courses*, 19. I prefer to learn in an unstructured way. 20. I prefer to learn general principles first and specific knowledge later.	3.17	0.58

6. Dimension of Experiential Value

The experiential value dimension was divided into two opposing tendencies of abstract and concrete. In this research, experiential learning refers to learning by doing, learning from experience, and contextualized learning. To identify the preference of experiential value, four questions were asked. Two of these questions measured the abstract tendency, while the other two questions measured the concrete tendency. The responses were entered on a five-point Likert scale. The mean of the measured abstract tendency was 3.10 with a standard deviation of 0.86. The mean of the measured concrete tendency was 3.92 with a standard deviation of 0.62. The results were listed in Table 30.

Table 30

Question Items for Experiential Value with Means and Standard Deviations

				Means	St. Dev.
D6	Experiential value	Abstract	*When I take online learning courses,* 21. I prefer to learn from textbooks rather than other resources. 22. I prefer to learn from theory rather than experience.	3.10	0.86
		Concrete	*When I take online learning courses,* 23. I prefer to learn by doing. 24 I prefer to learn through practical examples.	3.92	0.62

Asian students showed a higher score in concrete learning rather than in abstract learning. Most Asian students are culturally accustomed to abstract lectures, textbook

based learning, and memorization of abstract knowledge. However, this result indicated that the students who were studying in the US preferred real life learning, experiential learning, and practical learning.

7. Dimension of Instructor's Role

The role of instructor dimension was measured on two opposing tendencies of didactic and facilitative. To quantify the role of instructor dimension, four questions were asked. Two questions measured the didactic tendency; two questions measured the facilitative tendency. The responses were entered on a five-point Likert scale. The mean of didactic was 4.00 with a standard deviation of 0.60. The mean of facilitative was 3.98 with a standard deviation 0.63. The question items and results were listed in Table 31. This finding supported the expectation from the literature of Asian students' preferences for teacher-centered instruction.

Table 31

Question Items for Instructor's Role with Means and Standard Deviations

				Means	St. Dev.
D7	Instructor's role	Didactic	*When I take online learning courses*, 25. I believe the role of instructor is providing knowledge. 26. I believe an instructor should be an expert on the subject matter.	4.00	0.60
		Facilitative	*When I take online learning courses*, 27. I believe the role of the instructor is for guiding the learning. 28. I believe the role of the instructor is as a mentor.	3.98	0.63

8. Dimension of Value of Errors

To measure the dimension of value of errors, it was divided into two opposing tendencies of errorless learning, and learning from experience. Two questions were asked to measure the errorless learning tendency, and two questions were asked to

measure the tendency of learning from experience. The question responses were entered on a five-point Likert scale. The mean response of the errorless learning questions was 3.77 with a standard deviation 0.87. The mean response of the learning from experience question was 4.16 with a standard deviation 0.59 (see Table 32). This result was contrary to expected results from the culture literature.

Table 32

Question Items for Value of Errors with Means and Standard Deviations

				Means	St. Dev.
D8	Value of errors	Errorless learning	*When I take online learning courses,* 29. I prefer to repeat my learning until I can generate correct answers. 30. I do not want to make any mistakes in my tests.	3.77	0.87
		Learning from experience	*When I take online learning courses*, 31. I believe making a mistake is just a part of learning process. 32. I believe I can learn through my mistakes.	4.16	0.59

9. Dimension of Motivation

The dimension of motivation was divided into opposing tendencies of extrinsic and intrinsic. Extrinsic scales suggest an external motive for learning while intrinsic motivation suggests some internal incentives for learning. Two questions were used to measure the intrinsic tendency and two questions were used to measure the extrinsic tendency. The question responses were entered on a five-point Likert scale. The mean of extrinsic motivation responses was 3.66 with a standard deviation 0.72. The mean of extrinsic motivation responses was 3.25 with a standard deviation 0.68. The question items and results are shown in Table 33.

Table 33

Question Items for Origin for Motivation with Means and Standard Deviations

				Means	St. Dev.
D9	Origin of motivation	Extrinsic	*When I take online learning courses*, 33. I value saving time and money. 34. I value earning school credits more than I value enjoying the class.	3.66	0.72
		Intrinsic	*When I take online learning courses*, 35. I enjoy a variety of learning activities such as threaded discussions or other collaborative activities with students and the instructor. 36. I enjoy online learning itself.	3.25	0.68

10. Dimension of Program Flexibility

To measure the program flexibility dimension, the dimension was divided into two opposing tendencies of instructor-proof, and easily modifiable. The instructor proof tendency denotes rigid and fixed learning courses. Easily modifiable tendencies denote flexible learning courses. Two questions measured instructor proof tendencies and two questions measured easily modifiable tendencies. The questions were entered on a five-point Likert scale. The mean result of instructor proof measurement was 3.98 with a standard deviation 0.65. The mean result of the easily modifiable tendency was 3.29 with a standard deviation 0.74. The question items and results were shown in Table 34. Asian students preferred instructor-proof learning, which means they preferred well-defined and fixed learning objectives and schedules. Such a preference is related to behavioral theory and a strong uncertainty avoidance culture.

Table 34

Question Items for Program Flexibility with Means and Standard Deviations

				Means	Std. Dev.
D10	Program flexibility	Instructor proof	*When I take online learning courses*, 37. I prefer well-defined learning projects. 38. I prefer fixed learning schedules.	3.98	0.65
		Easily modifiable	*When I take online learning courses*, 39. I prefer self-paced learning. 40. I prefer flexible learning schedules.	3.29	0.74

11. Dimension of Accommodation of Individual Differences

This dimension refers to the consideration of individual previous knowledge, experience, learning attitude, motivations, and learning styles. The dimension was measured on two opposing tendencies of non-existent and consideration of multifaceted individual differences. The non-existent scale does not consider individual differences at all. The multifaceted scale considers the learner's individual differences by providing scaffolding and metacognitive supports. Two questions were used to measure the non-existent tendency and two questions were used to measure the multifaceted tendency. The responses were entered on a five-point Likert scale. The mean of non-existent accommodation responses was 4.33 with a standard deviation 0.58. The mean of multifaceted responses was 3.94 with a standard deviation 0.77. The results are shown in Table 35.

Table 35

Question Items for Accommodation of Individual Differences with Means and Standard Deviations

				Means	Std. Dev.
D11	Accommoda-tion of individual differences	Non-existent	*When I take online learning courses*, 41. I prefer well-organized learning courses. 42. I prefer a well-planned learning curriculum.	4.33	0.58
		Multifaceted	*When I take online learning courses*, 43. I prefer to use a variety of learning materials. 44. I prefer to have access to a wide array of supplementary learning materials.	3.94	0.77

12. Dimension of Learner Control

The dimension of learner control measures preferences of learners for their own learning management. Some learners prefer to manage their own learning, but some do not. The dimension of learner control is divided into two opposing tendencies of non-existent and unrestricted. Non-existent tendency indicates a preference of instructor-lead learning. The unrestricted tendency indicates self-directed learning. Two questions were used to measure the non-existent tendency and two questions were used to measure the unrestricted tendency. The question responses were entered on a five-point Likert scale. The mean of non-existent learner control responses was 3.82 with a standard deviation 0.60. The mean of unrestricted learner control responses was 3.64 with a standard deviation 0.83. The question items and results are listed in Table 36. Asian students prefer low learner control, which means that they prefer that the instructor leads the class and learning.

Table 36

Question Items for Learner Control with Means and Standard Deviations

				Means	Std. Dev.
D12	Learner control	Non-existent	*When I take online learning courses*, 45. I prefer that the instructor directs my learning. 46. I prefer the instructor gives me a deadline for my assignments.	3.82	0.60
		Unrestricted	*When I take online learning courses*, 47. I prefer to manage my own learning. 48. I prefer to assess my own learning.	3.64	0.83

13. Dimension of Learner (User) Activity

The dimension of learner activity measures learning environments. The dimension was divided into two opposing tendencies of mathemagenic, and generative. Mathemagenic user describes a tendency to restricted and firm learning access and instruction. Generative user describes a tendency to open and easily accessible learning resources and content. Two questions were used to measure mathemagenic tendency and two questions were used to measure generative tendency. The question responses were entered on a five-point of Likert scale. The mean of mathemagenic responses was 3.47 with a standard deviation 0.63. The mean of generative responses was 3.85 with a standard deviation 0.60. The question items and results are shown in Table 37.

Table 37

Question Items for User Activity with Means and Standard Deviations

				Means	Std. Dev.
D13	Learner activity	Mathemagenic	*When I take online learning courses*, 49. I prefer that the instructor controls my entire learning process. 50. I prefer to have class learning tasks rigidly specified in advance on the class syllabus.	3.47	0.63
		Generative	*When I take online learning courses*, 51. I prefer to be actively involved in my own learning. 52. I prefer to initiate my own learning.	3.85	0.60

14. Dimension of Cooperative Learning

The dimension of cooperative learning was divided into opposing tendencies of unsupported and integrated. Unsupported describes a tendency to individual learning rather than cooperative work. Integrated describes a tendency to prefer collaborative learning or small group work. Two questions were used to measure unsupported tendencies and two questions were used to measure integrated tendencies. The responses were entered on a five-point Likert scale. The mean of the unsupported results was 3.42 with a standard deviation 0.93. The mean of integrated results was 3.47 with a stand deviation with 0.76. The unsupported scale has a relatively wide standard deviation. Table 38 shows the question items, means, and standard deviations of cooperative learning dimensions.

Table 38

Question Items for Cooperative Learning with Means and Standard Deviations

				Means	Std. Dev.
D14	Cooperative learning	Unsupported	*When I take online learning courses*, 53. I prefer to work by myself without discussion with my classmates. 54. I prefer individual learning.	3.42	0.93
		Integrated	*When I take online learning courses*, 55. I prefer to perform class projects in small groups. 56. I prefer to cooperate to my classmates.	3.47	0.76

15. Dimension of Cultural Sensitivity

The cultural sensitivity dimension was divided into two tendencies of actioned and integrated. The cultural sensitivity dimension measured how well minority or indigenous culture is integrated and incorporated in the mainstream teaching culture. Two questions measured the actioned tendency and two questions measured the integrated tendency. The question responses were entered on a five-point Likert scale.

The mean of the actioned results was 3.77 with a standard deviation 0.59. The mean of the integrated response was 4.20 with a standard deviation 0.60 (see Table 39). The results indicate that Asian students are ready to accept other cultural differences and diverse opinions.

Table 39

Question Items for Cultural Sensitivity with Means and Standard Deviations

				Means	Std. Dev.
D15	Cultural sensitivity	Actioned	*When I take online learning courses*, 57. I believe learners' cultural backgrounds really affect learning achievement. 58. I am interested in my classmate's cultural backgrounds.	3.77	0.59
		Integrated	*When I take online learning courses*, 59. I am ready to accept cultural differences in both the instructor and classmates. 60. I am ready to listen attentively to others' opinions regardless their cultural backgrounds.	4.20	0.60

Table 40 shows a summary of the online learning preferences of the Asian students with online learning experience.

Table 40

Summary of Learning Preference of Asian Students With Online Learning Experience

			OL experience (N=34)		
	Dimension	Scales of Tendency	Means	St. Dev.	Comments
D1	Epistemology	Objectivism	3.86	0.60	Preferred constructivism
		Constructivism	4.11	0.87	
D2	Pedagogical Philosophy	Instructivism	3.76	0.78	Preferred constructivism
		Constructivism	3.92	0.87	
D3	Underlying Psychology	Behavioral theory	4.27	0.51	Preferred behavioral learning theory
		Cognitive theory	3.77	0.74	
D4	Goal Orientation	Sharply focused	4.20	0.61	Preferred sharply focused on learning goals
		Unfocused	3.58	1.02	
D5	Instructional Sequence	Reductionism	4.22	0.61	Preferred reductionism with rigid and hierarchical instructional sequence
		Constructivism	3.17	0.58	

Table 40 Continued

			OL experience (N=34)		
	Dimension	Scales of Tendency	Means	St. Dev.	Comments
D6	Experiential Value	Abstract	3.10	0.86	Preferred concrete experiential learning
		Concrete	3.92	0.62	
D7	Instructor's Role	Didactic	4.00	0.60	Preferred didactic role
		Facilitative	3.98	0.63	
D8	Value of Errors	Errorless learning	3.77	0.87	Preferred learning from experience
		Learning from experience	4.16	0.59	
D9	Origin of Motivation	Extrinsic	3.65	0.78	Preferred extrinsic motivation
		Intrinsic	3.33	0.67	
D10	Program Flexibility	Instructor proof	3.98	0.65	Preferred instructor controlled learning program
		Easily modifiable	3.29	0.74	
D11	Accommodation of individual difference	Non-existent	4.33	0.58	Preferred regimented and well-organized learning instead of self-regulated learning
		Multifaceted	3.94	0.77	
D12	Learner Control	Non-existent	3.82	0.60	Preferred disciplined learning or instructor-led learning
		Unrestricted	3.64	0.83	
D13	User activity	Mathemagenic	3.47	0.63	Preferred generative learning
		Generative	3.85	0.60	
D14	Cooperative Learning	Unsupported	3.42	0.93	Showed a higher score in cooperative learning
		Integrated	3.47	0.76	
D15	Cultural Sensitivity	Actioned	3.77	0.59	Preferred culturally integrated learning
		Integrated	4.20	0.60	

Learning Preference of 48 Asian Students with No Experience of Online Learning

Of 82 participants, 48 students responded they did not take any online learning courses. Although they reported they did not have any experience of online learning, analyzing their learning preference was valuable to help understand Asian students'

learning preference. A t-test was used to identify whether there were significant differences in the means of each measured tendency between the group with online learning experience and the non-experienced group. The results are shown in Table 41.

Table 41

t-tests between Online Learning Experience and No Experience Groups

Dimensions	Tendency	t	df	p	Difference
Epistemology	Objectivism		81	0.19	0.42
	Constructivism		81	0.61	0.17
Pedagogical philosophy	Instructivism	2.23	81	0.03*	0.70
	Constructivism	0.06	81	0.95	0.02
Underlying psychology	Behavioral theory		81	0.02*	0.70
	Cognitive theory	0.35	81	0.73	0.11
Goal orientation	Sharply focused		81	0.58	0.15
	Unfocused	0.59	81	0.56	0.17
Instructional sequencing	Reductionism		81	0.34	0.27
	Constructivism	0.28	81	0.78	0.12
Experiential value	Abstract		81	0.56	0.23
	Concrete	0.47	81	0.64	0.15
Role of instructor	Didactic	0.41	81	0.69	0.13
	Facilitative	0.38	81	0.70	0.11
Value of errors	Errorless learning		81	0.88	0.05
	Learning from experience	0.90	81	0.37	0.27
Motivation	Extrinsic		81	0.13	0.45
	Intrinsic	1.47	81	0.14	0.50
Program flexibility (structure)	Teacher proof		81	0.15	0.58
	Easily modifiable		81	0.86	0.05
Accommodation of individual differences	Non-existent		81	0.31	0.28
	Multifaceted		81	0.85	0.07
Learner control	Non-existent		81	0.94	0.02
	Unrestricted	0.86	81	0.39	0.29
User activity	Mathemagenic	0.59	81	0.56	0.18
	Generative	0.47	81	0.64	0.13
Cooperative learning	Unsupported		81	0.31	0.44
	Integrated	1.41	81	0.16	0.45
Cultural integration	Non-existent		81	0.52	0.18
	Integrated		81	0.43	0.25

N=82; * $p<0.05$ level (two-tailed)

There were no significant differences between the two groups (online learning experience group and non-experience group) except on the pedagogical philosophy and

underlying psychology dimensions. The pedagogical philosophy dimension showed differences between online learning experience group and no online learning experience group. Students who had online learning experience preferred constructivism as a philosophical foundation. However, the students who did not have online learning experience group preferred instructivism. Instructivism primarily focuses on direct instruction, mastery learning, or explicit teaching based on specific objectives. This instruction is typically associated with Asian culture and teaching.

The underlying psychology dimension also had statistically significant differences between the online learning experience group and the non-online learning experience group as shown in Table 40. The online learning experienced group strongly preferred behavioral psychological learning theory. However, the group with no experience did not have any preference differences between cognitive instruction and behavioral instruction.

In summary, online learning experience and non-experience groups were generally similar groups because there were statistically no significant differences between the learning preference of the two groups except for pedagogical philosophy and underlying psychology dimensions.

Learning Preferences of All 82 Asian students

Regardless of online learning experience or not, overall learning preferences were measured to understand the tendency of Asian students' learning preferences (N=82). On the epistemology dimension, Asian students showed the mean of objectivism as 3.74, and constructivism as 4.07. Asian students showed higher score in constructivism in comparison to objectivism. On the pedagogical philosophy dimension, instructivism

showed a slightly higher mean than constructivism. The mean of instructivism was 3.97, the mean of constructivism was 3.93. On the underlying psychology dimension, the mean of behavioral theory was 4.07, the mean of cognitive theory was 3.81. Asian students preferred behavioral learning theory over cognitive theory based learning. On the goal orientation dimension, Asian students revealed preference for sharply focused learning goals. The mean of sharply focused goal orientation was 4.13, whereas the mean of unfocused goal orientation was 3.62.

In the instructional sequence dimension, reductionism was preferred over constructivism. The mean of reductionism was 4.18, whereas the mean of constructivism was 3.23. In experiential value, Asian students showed higher mean score of concrete learning over abstract learning. The mean of learning through abstract experience was 3.04, whereas the mean of concrete experience was 3.97.

On the instructor role dimension, a didactic role was preferred over facilitative, but the mean difference was small. The mean of didactic role was 4.04, whereas the mean of facilitative role was 4.02.

On the value of error dimension, findings indicated Asian students preferred learning from experience. Asian students revealed higher score through learning from experience than errorless learning. The mean of errorless learning was 3.61, whereas the mean of learning from experience was 4.15.

On the origin of motivation dimension, Asian students preferred extrinsic motivation. The mean of extrinsic motivation was 3.65, whereas the mean of intrinsic was 3.33.

On the program flexibility dimension, participants strongly preferred instructor controlled learning programs. The mean of instructor proof program was 3.85, whereas the mean of easily modifiable program was 3.44.

On the accommodation of individual differences dimension, Asian students preferred regimented learning. Asian students showed a higher score in regimented learning than multifaceted individual learning. The mean of no individual difference learning was 4.26, compared to the mean of modifiable individual learning, which was 3.92.

On the learner control dimension, Asian students responded that they prefer the instructor to strictly control their learning in well-organized instruction. The mean of limited learning control was 3.82, compared to the mean of unrestricted learning control, which was 3.72.

On the dimension of user activity, Asian students preferred a generative approach which features involvement in learning activities. Asian students preferred to be deeply involved in their own learning activities. The mean of mathemagenic learning approach was 3.52, whereas the mean of generative learning approach was 3.89.

On the cooperative learning dimension, participants seemed to prefer collaborative learning. The mean of collaborative learning was 3.60, whereas the mean of unsupported collaborative learning was 3.30.

On the cultural sensitivity dimension, participants favored integration of cultural sensitivity in their learning. The mean of integration of cultural sensitivity to learning was 4.13, whereas the mean of exclusion of cultural integration in learning was 3.73.

Table 42 shows, for all respondents, the means and standard deviations of scores of the measured tendencies on all 15 Henderson cultural dimensions.

Table 42

Learning Preference of Asian Students

	Overall Asian Students Learning Preference (N=82)			
Dimension	Scales of Tendency	Means	St. Dev.	Comments
Epistemology	Objectivism	3.74	0.72	Constructivism was preferred
	Constructivism	4.07	0.75	
Pedagogical Philosophy	Instructivism	3.97	0.72	Means indicated no differences
	Constructivism	3.93	0.84	
Underlying Psychology	Behavioral theory	4.07	0.66	Behavioral learning theory was preferred
	Cognitive theory	3.81	0.68	
Goal Orientation	Sharply focused	4.13	0.62	Sharply focused learning objectives preferred
	Unfocused	3.62	0.90	
Instructional Sequence	Reductionism	4.18	0.60	Reductionism was preferred
	Constructivism	3.23	0.63	
Experiential Value	Abstract	3.04	0.86	Preferred to learn through concrete experiences
	Concrete	3.97	0.70	
Instructor's Role	Didactic	4.04	0.68	Means indicated no differences
	Facilitative	4.02	0.65	
Value of Errors	Errorless learning	3.61	0.89	Leaning from experience was preferred
	Learning from experience	4.15	0.65	
Origin of Motivation	Extrinsic	3.65	0.78	Extrinsic motivation was preferred
	Intrinsic	3.33	0.67	
Program Flexibility	Instructor proof	3.85	0.67	Instructor lead program was preferred
	Easily modifiable	3.44	0.76	
Accommodation of individual difference	Non-existent	4.26	0.61	Regimented learning was preferred
	Multifaceted	3.92	0.81	
Learner Control	Non-existent	3.82	0.66	Limited learner control was preferred
	Unrestricted	3.73	0.75	

Table 42 Continued

	Overall Asian Students Learning Preference (N=82)			
Dimension	Scales of Tendency	Means	St. Dev.	Comments
User activity	Mathemagenic	3.52	0.69	Generative learning approach was preferred
	Generative	3.89	0.60	
Cooperative Learning	Unsupported	3.30	0.95	Collaboration and team work were preferred
	Integrated	3.60	0.72	
Cultural Sensitivity	Non-existent	3.73	0.63	Integration of cultural sensitivity was preferred
	Integrated	4.13	0.69	

Comparison of Overall Learning Preferences

Table 43 compares the measured means and standard deviations of all three Asian students groups: the online learning experience group, the non-experience group, and overall (combined non-experienced and experienced) group. There were differences between online learning and no learning experienced groups in the pedagogical philosophy dimension. It showed higher score in constructivism tendency over instructivism in the online learning experience group. However, the no online learning experience group revealed higher score in instructivism tendency over constructivism. The overall learning preference showed similar scores between instructivism and constructivism tendency.

Table 43

Comparison of Overall Learning Preferences

			OL experience (N=34)		No OL experience (N=48)		Overall Learning Preferences (N=82)	
	Dimension	Scales of Tendency	Means	St. Dev.	Means	St. Dev.	Means	St. Dev.
D1	Epistemology	Objectivism	3.86	.60	3.65	.78	3.74	.72
		Constructivism	4.11	.87	4.03	.66	4.07	.75
D2	Pedagogical Philosophy	Instructivism	3.76	.78	4.11	.63	3.97	.72
		Constructivism	3.92	.87	3.92	.82	3.93	.84
D3	Underlying Psychology	Behavioral theory	4.27	.51	3.92	.71	4.07	.66
		Cognitive theory	3.77	.74	3.83	.63	3.81	.68
D4	Goal Orientation	Sharply focused	4.20	.61	4.07	.62	4.13	.62
		Unfocused	3.58	1.02	3.64	.81	3.62	.90
D5	Instructional Sequence	Reductionism	4.22	.61	4.14	.59	4.18	.60
		Constructivism	3.17	.58	3.26	.66	3.23	.63
D6	Experiential Value	Abstract	3.10	.86	2.98	.85	3.04	.86
		Concrete	3.92	.62	4.0	.75	3.97	.70
D7	Instructor's Role	Didactic	4.00	.60	4.06	.74	4.04	.68
		Facilitative	3.98	.63	4.04	.66	4.02	.65
D8	Value of Errors	Errorless learning	3.77	.87	3.46	.89	3.61	.89
		Learning from experience	4.16	.59	4.13	.68	4.15	.65
D9	Origin of Motivation	Extrinsic	3.65	.78	3.63	.82	3.65	.78
		Intrinsic	3.33	.67	3.38	.64	3.33	.67
D10	Program Flexibility	Instructor proof	3.98	.65	3.76	.66	3.85	.67
		Easily modifiable	3.29	.74	3.54	.74	3.44	.76
D11	Accommodation of individual difference	Non-existent	4.33	.58	4.19	.63	4.26	.61
		Multifaceted	3.94	.77	3.90	.83	3.92	.81

Table 43 continued

			OL experience (N=34)		No OL experience (N=48)		Overall Learning Preferences (N=82)	
	Dimension	Scales of Tendency	Means	St. Dev.	Means	St. Dev.	Means	St. Dev.
D12	Learner Control	Non-existent	3.82	.60	3.81	.71	3.82	.66
		Unrestricted	3.64	.83	3.79	.67	3.73	.75
D13	User activity	Mathemagenic	3.47	.63	3.56	.72	3.52	.69
		Generative	3.85	.60	3.91	.60	3.89	.60
D14	Cooperative Learning	Unsupported	3.42	.93	3.2	.94	3.30	.95
		Integrated	3.47	.76	3.69	.68	3.60	.72
D15	Cultural Sensitivity	Actioned	3.77	.59	3.68	.66	3.73	.63
		Integrated	4.20	.60	4.08	.73	4.13	.69

Open-Ended Questions – Research Questions #3, #4, and #5

Online Learning Problems – Research Question #3

To investigate the problems of online learning as perceived by Asian students, the question, "What is the most difficult problem you personally experience when you take an online course?" was asked. Thirty-three (33) participants responded to this question in various ways. Based on thematic summarizing and ranking, the main problems identified were procrastination, self-control, time management, lack of feedback, lack of interaction, English problems, and communication problems.

Several students pointed out that "not able to ask questions to professors during online courses" were a problem. Specific problems related to asking questions were listed, including these:

"I can not ask the instructor questions at any time during the class.";

"If I have a question, I cannot ask it right away. I need to wait to ask it." ;

"Not able to ask during the lecture.";

"Unable to ask any doubts to the professor while listening to the lecture on the video."

Regarding procrastination, typical responses were:

"Because there is no need to go the class at specific time, it is very easy to be lazy. Sometimes, I read materials and studied for those with a rush near due date.";

"Postpone the assignment and finally give up." ;

"Sometimes, I forget to do my quiz or homework."

Time management also emerged as a main problem. For example:

"Time management is the most difficult in online learning because it has to incorporate with my work schedule and family life."

"Time-schedule is problem".

Several students answered that self-control is one of the main problems. Furthermore, English problems, lack of interaction, and lack of immediate feedback were also mentioned as main problems. One respondent pointed out that online learning gives too many assignments and requires a lot of work. A student also responded that online learning is expensive, and does not save any money. Based on the indicated responses, the major problems were classified into the following categories:

1) Communication problems: I can not ask any questions during the class; I can not complete enough discussion through online learning; there is less communication with the instructor compared to face-to-face classes

2) Connection to Internet (technology problem): difficult to connect on raining days

3) English problems: when I do online discussion, sometimes lack of English proficiency hindered communication

4) Expensive: Online learning courses are expensive

5) Group projects: group projects are a problem

6) Lack of concentration: while watching video streaming or online classes, I can not concentrate

7) Lack of feedback, can not ask question immediately

8) Lack of interaction with the professor

9) One way education, so boring

10) Procrastination: I don't need to go at specific time, it is easy to be lazy; postpone and finally give up

11) Proper handouts: the instructor does not distribute appropriate handouts;

12) Self control: it is hard to control schedule myself; lack of self-control;

13) Time management

14) Too much assignment

Online Learning Benefits – Research Question #4

To identify the benefits of online learning, the question was asked "What is the best benefit you personally experience when you take an online course?" The Asian students' responses fell into the following categories:

1) Acceptance of multiple opinions: acceptance of other point of view
2) Accessibility: easily accessible at any time regardless of the place
3) Efficiency: more focusing, more efficiency
4) Flexibility: able to study at a flexible time; flexible schedules; flexible time; time flexibility etc, many participants answered the flexibility is one of the benefits an online learning courses, no pressure, taking class anytime
5) Ability to repeat the classes until I understand: I can listen back the video again and again; I have been able to repeat listening to lectures till I completely understood
6) Saving time and money; saving time; time saving etc. Several participants responded saving time and money
7) Self-paced learning: I can work based on my own pace; self-paced learning process
8) Time management: easily manage own time

Recommendation for Online Learning Improvement – Research Question #5

To improve online learning courses, the researcher asked "In order to improve an online course, what do you want to recommend?" The participants commented as follows:

1) Need to increase the interaction between students and instructors

2) Reduce the pressure of deadline of assignment and penalty

3) Manageable assignment and reading materials; Too much assignment and reading amount easy to cause the failure of online learning

4) Detail online learning instruction and guidelines of class; "There should be better instruction given because not everyone understands or comprehends the same way. So when the instructor posts something, many students may not compactly comprehend what the point he/she is trying to get across."

5) Immediate feedback and timely feedback

6) Improvement of good communication system using MSN, AOL, IM, etc for students and instructor

7) Want to have more variety of online learning classes; there should be more variety of online learning courses

8) Give clear objectives to students

9) Consider student's needs

10) Provide various materials for students

11) Detail instruction with quality instruction

12) Instructor should respond more often and better ways

13) Prefer textbook – based learning rather than personal experiences; Instead of writing of individual assignment by instructor but have test by textbook. Too many materials are to read. I can not read all the materials given an each week.

14) Need to improve accessibility (easy to access) and reading

CHAPTER V

SUMMARY, DISCUSSIONS, AND RECOMMENDATIONS

Overview

Online learning reaches more diverse types of learners than traditional classroom lectures. However, most online learning courses were developed based on a Western philosophy, epistemology, values, and culture. The students who come from Eastern cultures often encounter difficulties when they take online courses. Research literature reports that the most critical issues for Eastern learners in online settings in the U.S. are cultural differences, instructional design dissimilar from home country, unfamiliar user interfaces, unfamiliar learning and teaching styles, and English proficiency or language discourse problems (Bently, Tinney, & Chia, 2005; De Vita, 2001; Edmundson, 2007; Henderson, 1996; Lim & Jusri, 2003; Liu, 2007b; Marcus, 2006; Marcus & Gould, 2000; Marinetti & Dunn, 2002; McLoughlin, 2000; McLoughlin & Oliver, 1999; Nisbett, Peng, Choi, & Norenzayan, 2001; Pincas, 2001; Tu, 2001; Wilson, 2001). These difficulties were exposed in both traditional classroom courses and online learning courses. However, these difficulties are often greater in online learning courses because of their unique characteristics. The research reported here posited that although the cultural considerations were important elements in online learning courses, many instructional designers and instructors are not aware of these problems.

According to the research literature (Hall, 1989; Henderson, 1996; Hofstede, 2001; Marcus, 2006; Yamazaki, 2005), cultural dimensions partially affect learning preferences of learners in educational contexts. Other research showed that Hofstede's (2001) cultural dimensions were partially related to Henderson's (1996) cultural model. For example, most of East Asian countries such as Korea, Japan, China, and Taiwan are strong power distance and strong uncertain avoidance countries. Research indicated that students who came from East Asian countries preferred authoritarian instructor's role, behavioral learning instruction, regimented learning and cooperative learning. These results indicated that cultural dimensions and learning preferences were related.

To measure Asian students' learning preference, an instrument was developed for this study based on Henderson's (1996) multiple cultural model. It was composed of 15 dimensions and 30 tendencies (see APPENDIX B). To establish content validity, two field tests were performed. To measure construct validity, correlation coefficients (r) were calculated. From among 94 original test items, 60 high-correlation items were selected for sampling validity. To explore the underlying structure of the questionnaire results, the researcher also conducted factor analysis. It revealed three distinct factors in the instrument, which supports a conclusion that Henderson's multiple cultural model is underpinned by three distinct concepts.

This study found that Asian students preferred behavioral learning instruction, sharply focused on learning goals, reductionism - rigid, hierarchical progression with linear instruction, direct instruction, extrinsic motivation, instructor-proof instructional design, strictly controlled learning, and cooperative learning. These learning preferences

were closely related to cultural dimensions as defined by the Hofstede's (2001) and Hall's (1984) cultural models and theories applied in the study.

The researcher provided a detailed summary of the study, the results and findings, their implications, and recommendations for further research in this chapter. The study was delimited by its sample, and the result of this study can not be generalized to other Asian countries except East Asian countries.

Summary of the Study

The Purpose of the Study

The purpose of this study was to identify cultural dimensions and Asian students' online learning preferences at Oklahoma State University. To address this purpose, the study specifically described Asian students' demographic profile, Asian students' online learning preferences, their problems with online learning experience, their perceived benefits, and recommendations for improving online learning results.

Targeted Population and Sample

The target group was Asians students at Oklahoma State University (OSU) who come from China, Korea, Japan, and Taiwan. The total target group population was 387 students who enrolled at OSU during the Fall, 2008 semester. The sample was the group who voluntarily participated in this online research survey. Among 387 students, 82 students participated in this research.

Instrument

The study's instrument was developed based on Henderson's multiple cultural model dimensions (see APPENDIX B). To establish content validity, correlation coefficients (r) was calculated by measuring each item to total score and each dimension to total score. Among 94 original items, 60 items were chosen for the final instrument by selecting the highest correlations. In addition field tests and a pilot study were performed to establish validity of the instrument. To check the underlying structure of the instrument, exploratory factor analysis was also performed. To measure the internal consistency, reliability Cronbach's alpha was performed. The obtained alpha score was 0.90 with 60 question items.

Analysis of Data

To analyze the data, descriptive statistics for quantitative data and constant comparison methods for open-ended data were used. For the analysis of quantitative data the SPSS software was used. Frequency distribution was calculated to analyze demographic profile and online learning preferences. The frequency and the relative percentage of frequency of each variable were analyzed. Mean comparisons and standard deviations were used for analysis of online learning preferences. To compare the responses of online learning experience and non-experience groups, t-tests were performed to measure the difference of means. Exploratory factor analysis was conducted to explore the underlying structure of variables on the instrument. To determine the number of factors, eigenvalues and scree plot were checked. The initial 18 factors were extracted from analysis of principal components, retaining those factors

whose eigenvalues were greater than 1.00. The researcher elected to extract three factors with Varimax rotation method.

To identify personal problems, benefits, and recommendations for online learning based on personal experience, a qualitative method was used. For an analysis of qualitative data, constant comparison was used. Constant comparison is categorizing the recurrent data using key words (Mertens, 1998). After categorization of data, the cross-tabulation method was used to assess the relationship between variables. The results were described with tables and graphs.

Summary of the Findings, Related Conclusions, and Discussions

Demographic Profile

Among 387 students of the target population, 21% of participants (82 students) responded. In gender distribution, 47.6% (N=39) of male and 52.4% (N=43) female students participated. Regarding age group, over 50% (N=41) participants were less than 26 years old. Almost 90% of respondents were less than 35 years old, which supports a conclusion that the participating Asian students were relatively young.

In nation of origin, Korean participants were 47.6% (N=39), Chinese were 35.4% (N=29), Japanese participants were 12.2% (N=10), and the Taiwanese were 3.7% (N=3). The distribution of nationality was skewed compared to the target population. According to OSU International Student Association statistics, 45.21% are Chinese students, 27.64% are Korean students, 21.96% are Japanese students, and 5.1% are Taiwanese students based on enrollments at Spring, 2008. So compared to the target population, the sample population had more Korean students in exchange for fewer Chinese students.

On the question of online learning course experience, 58.5% (N=48) students responded they did not have any online learning experiences. This response may indicate that: 1) the participants did not perceive accurate operational definition of online learning courses; 2) the researcher did not give clear explanation about online learning definitions, so some students with online experience mistakenly answered negatively; 3) Asian students may tend to avoid online learning courses because of several hindrances such as language barriers or lack of interaction between instructor and classmates.

Regarding level of technology, over 85% (N=63) of the students answered that they were either fairly skilled or power users. This finding supports a conclusion that in Asian countries, Internet usage and computer skills are widespread among young educated students. Such a conclusion is supported by statistical data available in the public domain. For example, according to Korea broadband and telecommunication reports, 70.7% of the total population used broadband Internet as of September, 2008, while 73.8% population of Japanese used broadband Internet. China had 19.0% of its population using the Internet as of June, 2008 (Internet World Stats). It is likely the most Chinese student at OSU come from well-to-do urban families that have broadband Internet access. Because large majorities of the sample were graduate students, they would likely have acquired Internet experience at their universities in their own countries. Broadband Internet access in North America is 73.6% of population (Internet World Stats: Usage and population statistics, 2008). These Internet statistics indicate that the technology level of the sample population should be high.

Concerning the self-identified academic major, various majors were reported – Accounting, Agriculture Economics, Apparel Design, Educational Psychology, Architecture, Biochemistry, Business, Electrical engineering, English. Finance, Computer Sciences, Interior Design, Hotel Management, Journalism, Linguistics, Marketing, Industrial Engineering, Natural Resource Ecology and Management, Political Sciences, Statistics, Master of Fire and Emergency Management, and Mechanical Engineering. A large variety of majors of Asian students participated in this research. However, the dominant majors were engineering and architecture (20.7%) and business (14.6%). This result indicated that the sample of Asian students were skewed in favor of technology and finance majors. This was expected, because of two reasons: 1) OSU funding of graduate students was biased toward science and engineering, resulting in large funding of foreign graduate students in those majors; 2) Asian students in foreign universities tend to prefer science and engineering over social sciences and the arts because of language barriers in the latter topics.

In level of degree program, 41.5% (N=34) of students were pursing Bachelor degree, 24.4% (N=20) were Master and 32.9% (N=27) were pursued Doctoral degree. This indicated that over 60% of participants were graduate level students. This result was expected. OSU funds many foreign graduate students, but for financial and social reasons, most Asian students prefer to perform their undergraduate studies in their home countries.

Taken collectively, the demographics of this sample support a conclusion that online learning preference and problems reported are not likely caused by age, nature of

academic major, or a level of technology skill. This strengthens an argument that the underlying issues are cultural in origin.

Online Learning Preferences

To analyze online learning preferences of the Asian students, it was posited that they should have at least one online learning course experience. Among the 82 respondents, only 34 students had online learning experiences. Therefore this analysis was based on these 34 students.

Findings supported a conclusion that culture, measured using Henderson's dimensions, did have some effects on Asian students' online learning preferences. The results of mean comparison showed that among 15 dimensions, Asian students revealed high score in the following nine dimensions: underlying psychology, goal orientations, instructional sequencing, instructor's role, origin of motivation, program flexibility, accommodation of individual differences, learner control, and cooperative learning. These nine dimensions appeared related to Henderson's, Hofstede's or Hall's cross-cultural dimensions. These cultural relationships are summarized in Table 44.

Table 44

Multicultural Models of Henderson's, Hofstede, and Hall

Multicultural Model	Henderson	Hofstede	Hall
Underlying Psychology	Behavioral theory based instruction	Strong Uncertainty Avoidance	
Goal orientation	Sharply focused goals	Strong Uncertainty Avoidance	
Instructional Sequence	Reductionism	High Power Distance	M- Time vs. P-Time Cultures
Instructor's Role	Didactic	High Power Distance	Low-Context vs. High-Context Culture
Origin of Motivation	Extrinsic	Individualism vs. Collectivism	
Program Flexibility	Instructor-Proof	High Power Distance	
Accommodation of Individual Difference	Non-Existent	High Power distance	
Learner Control	Non-Existent	High Power distance	
Cooperative Learning	Integrated	Individualism vs. Collectivism	M-Time vs. P-Time Cultures

The results of this study supported a conclusion that Asian students appeared to have preferences that were in line with behavioral learning theory instruction, and these preferences are related to culture. Behavioral learning theory is a learning approach where the learner's desirable behaviors are shaped through the scientific arrangement of stimuli, responses, feedback, and reinforcement. Behavioral learning theory focuses on observable behaviors rather than changing internal or mental cognition. Students prefer obviously and clearly defined learning objectives (Elias & Merriam, 1995; Merriam & Caffarella, 1999). This learning theory is possibly related to strong uncertainty avoidance culture. Students who are from strong uncertainty avoidance cultures prefer clearly stated learning objectives because they feel threatened in unpredictable learning situations. They feel uncomfortable in an open learning environment with broad learning objectives (Hofstede & Hofstede, 2005).

Behavioral instruction also underlies learning outcomes. Asian students think that test results are more important than actual knowledge (Liu, 2007a). This is because, in their home countries, entrance examination results determine which college a student enters. The college entered totally determines the students' future life and social status. Once a student enters college, studying and testing are not important. Students are seldom ejected from school for academic performance. In most Asian countries, education is centralized and controlled by the government (Liu, 2007a). This type of culture is also associated with high power distance education (Hofstede & Hofstede, 2005).

The finding of this study indicated that Asian students preferred to be sharply focused on goal orientation. The mean of the results on the sharply focused on goal orientation was 4.20 whereas, the mean of unfocused goal orientation was 3.58. Asian students responded they preferred clearly stated learning objectives and predetermined goals rather than flexible and open-ended learning goals. This indication implied cultural influences and learning relationships in Hofstede's cultural dimensions. According to Hofstede (2001), students who come from a strong uncertainty avoidance culture prefer structured learning situations with precise objectives, detailed assignments, and strict timetables. China, Korea, and Japan belong to strong uncertainty culture. This finding supported the conclusion that online learning preferences are related to cultural dimensions.

In the instructional sequence dimension, reductionism scored much higher than constructivism. The mean of reductionism was 4.22, whereas the mean of constructivism was 3.17. Regarding preference of reductionism, the questionnaire

asked preference for step-by-step learning and linear learning. Proponents of reductionism believe that effective learning takes places only in a rigid, hierarchical progression with linear instruction. Thus, most of the curriculum and teaching are divided and sequenced into unrelated parts (Poplin, 1988). The instructor offers the learning information partially and organizes in a logical order. Students who preferred reductionism wanted rigid and hierarchical linear learning rather than unstructured and open learning situations. Reductionism is related to high power distance culture. China, Korea, and Japan belong to high power distance culture (Hofstede, 2001). Generally, in high power distance countries, curriculum, teaching, even learning materials are assigned from the government or the department of education (Liu, 2007a). Thus, these results supported a conclusion that Asian students at OSU grew up high power culture and showed a tendency to prefer constrained and hierarchical learning.

In experiential value dimension, the participants preferred to learn through concrete experience. The mean of abstract was 3.10, whereas the mean of concrete was 3.92. Asian students preferred to learn through experiences, practical examples, and by doing. Learners who prefer to learn through concrete experience on the whole favor experience-based on learning. Yamazaki and Kayes (2007) examined cultural difference and learning style based on Kolb's experiential learning model 267 Japanese manager and 126 American mangers were participated in this study. The results revealed Japanese managers were more concrete and more active in their learning styles, whereas American managers were more abstract and active. The learners who prefer to learn through concrete experience is relate to Witkin's field dependence style. These learners rely heavily on feeling and intuition. Concrete experience learners tend to be "people

oriented." and favor to learn through hand-on experience. They commonly use instinct rather than logic. They prefer to work in teams to complete tasks. These learning preferences are associated with field-dependence and collectivism. Field-dependent learners usually rely on people or situations when they collect and process information (Pithers, 2000). Students from collectivism culture prefer to work as a team (Hofstede, 2001).

American managers revealed high score in abstract conceptualization and active experimentation (Yamazaki & Kayes, 2007). Learners who prefer to learn through abstract conceptualization mainly use analytical and conceptual approach in learning. These learners rely on logical thinking and rational evaluation. The field-independent learners typically perceive objects or contexts analytically and less dependent on people. They prefer to work individually and work alone (Barmeyer, 2004; Pithers, 2000; Yamazaki & Kayes, 2007). The results of the experiential value dimension are congruent with Kolb's experiential learning model.

Learning from concrete experience is also related to Hall's high and low context dimensions. Hall's high-context culture is conceptually associated with concrete experiences. Learners from high-context culture are sensitive to immediate environment and collect information through specified surroundings (Pithers, 2000). They usually rely on interpersonal relationship to accomplish their goals. Low-context culture is conceptually associated with abstract conceptualization (Yamazaki, 2005). When they communicate clearly deliver their messages based on rational thinking process. They prefer to learn using logical, abstract, rational, and symbolic presentation form (Yamazaki, 2005).

In the instructor's role dimension, didactic teaching method was preferred over a facilitative one. Although there were no mean differences between didactic and facilitative roles, interestingly both online learning experience and non-experience groups preferred didactic instructor's role rather than facilitative role. Didactic teaching refers to direct instruction and instructor-centered teaching (Rezaei & Katz, 2002; Smerdon, Burkam, & Lee, 1999). Lecture is the main method in didactic teaching. Students absorb passively the learning contents. Didactic teaching often employs intensive teaching or less supportive teaching (Rezaei & Katz, 2002). As a whole, one often argues that facilitative teaching is better than didactic teaching; however the didactic teaching method has several advantages. It is effective when time is critical and a large volume of information needs to be delivered. It also saves time and cost in intensive courses such as medical reeducation or intensive computer retraining. It is effective for rote memorization, repetition, drill, and memorization of facts (Smerdon, Burkam, & Lee, 1999).

In high power distance cultures, students prefer the didactic teaching method. Students prefer instructor-centered, instructor-led classes (Hofstede & Hofstede, 2005). The instructor initiates all classes in high power distance. Students listen to the lectures, take notes and do a lot of homework after school (Hofstede, 2001). Preferring didactic method reflects some cultural influences, so this finding supports the conclusion that learning preferences are related to culture.

In the dimension of origin of motivation, extrinsic motivation was higher scored than intrinsic motivation. The mean of extrinsic motivation was 3.66, whereas the mean of intrinsic motivation was 3.25. This indicated that over 60% of participants take online

courses to save time and money. It was expected results. Most of foreign students pursue advanced degree in the US. They prefer to earn credits and complete their learning courses through accelerated courses or online courses.

In the dimension of program flexibility, instructor-proof learning was preferred. The mean of instructor-proof was 3.98, whereas the mean of easily modifiable was 3.29. An instructor or teacher-proof learning method refers to restriction of the learning program and activities by instructor. It refers to how the instructor controls all the learning process – identifying the objectives of instruction, selecting the useful learning experiences, organizing learning experiences, and evaluating learning (Vrasidas, 2000). Instructor-proof learning is teacher-centered learning. In Asian countries, teacher is a master and expert of subject matter (Hofstede, 2001). Both Asian parents and students tend to trust teacher proof learning is better than individualized learning (Hofstede & Hofstede, 2005). Teacher-proof learning is that teacher has responsibility for all teaching and learning courses. Therefore, Asian student just follow what teacher's direct. This finding supports the conclusion that learning preferences are related to culture.

In the dimension of accommodation of individual differences, Asian students preferred strictly controlled. The mean of non-existent accommodation of individual differences was 4.33, whereas the multifaceted accommodation of individual difference was 3.94. Asian students generally prefer harmony, conformity, and consensus. They do not have individualization because Asian culture is collectivism culture (Hofstede, 2001). East Asian countries do not take into account learner's previous experiences, motivation, learning styles, and prerequisite knowledge because most of educational

systems are similar – it was centralized by government or ministry of education. This dimension is related to high-power distance (Hofstede, 2001; Liu, 2007a). This finding supports the conclusion that learning preferences are related to culture.

In the learner control dimension, Asian students preferred regimented learning rather than unrestricted control. The mean of non-existent of learner control was 3.82 compared to the mean of 3.64 of unrestricted. Asian students responded they preferred direct and controlled learning from instructor rather than self-directed learning. This learner control dimension is associated with behavioral learning theory, instructional sequence, and didactic instructor's role. Traditionally, Asian students believe the instructor is master of a subject. Both parents and students believe that if the instructor controls the learning, students will learn more effectively (Hofstede, 2001; Zhang, 2001). The learner control dimension is also related to power distance culture. This finding supports the conclusion that learning preferences are related to culture.

In cooperative learning, Asian students preferred cooperative learning. However, the means differences were small between cooperative and non-cooperative learning. The mean of cooperative learning was 3.47, while no preferred cooperative learning was 3.42. This indicated that some students preferred cooperative learning but some did not. One side of this result reflected collectivism culture. In collectivist culture members are interested in attaining group goals, balancing harmony and consensus with group members, and honor of group outcomes rather than self-actualization. In a collectivist culture classroom the teacher often deals with students as part of an in-group, never as an isolated individual. This prevents hurting the students' feeling when they made mistakes (Hofstede & Hofstede, 2005). Or another side, this

result indicated the competitive culture of Asia countries. This competitive culture comes mostly from entrance examination. According to Zhang (2001), "Asian students do not like to share homework or other successful examples with others. They value individual efforts. They try their best to stay on the top of the class" (pp. 302-303).

Comparison of Online and No-Online Learning Experience Groups

To compare the online learning experience group and no-experience group, t-tests were conducted. There were no means differences among the 15 dimensions except for pedagogical philosophy and underlying psychology. The online learning experience group preferred constructivism philosophy principles in their learning, whereas the no-online learning experience group preferred instructivistic learning principles. Constructivism takes into account learner-centered learning and emphasizes learner's learning experience. It also emphasizes internalization of learning process and reconstruction of individual knowledge. However, instructivism focuses on instructor-centered teaching with well-organized learning content (Rezaei & Katz, 2002). This indication implied that the online learning experience group preferred contextualized learning with real experience. No-online learning experience group preferred instructivism. This results supported the idea that the non-online learning experience group favored instructor centered learning with carefully designed direct learning.

Regarding the underlying psychology dimension, the online learning group preferred behavioral learning theory, whereas the non-experience group showed a slightly higher score in behavioral theory. Regardless of online learning experience, both experienced and non-experienced groups preferred behavioral learning theory based

instruction. This result supported a conclusion that Asian students learning preference was related to culture. In Asian countries, college entrance examinations are related to behavioral learning objectives, process, and evaluation.

Personal Problems, Benefits, and Recommendations for Online Learning

On personal problems of online learning, the students that were surveyed indicated lack self-discipline, procrastination, lack of feedback, lack of interaction, communication problems between instructor and peers, too many assignment, English problems, only "one-way" communication, problems with group projects, and unreliable connection to the Internet.

Although the online learning course is a highly effective medium for mature and independent adult learners, it is often hard to succeed without careful time management, self-discipline, motivation, and active participation (Tallent-Runnels, Thomas, Lan, Cooper, Ahern, & Shaw, 2006). Many studies (Golladay, Prybutok, & Huff, 2000; Serwatka, 2003; Tallent-Runnels, Thomas, Lan, Cooper, Ahern, & Shaw, 2006) have shown that online learning requires a considerable amount of discipline and self-motivation. To complete online learning courses, the students need to invest a significant time (Serwatka, 2003). In addition, learner motivation has an impact on learner's performance and online learning success. If learners perceive some benefits to their learning such as promotion or future career improvement, they will be more motivated to perform well. Researchers (Adler, Milne, & Stablein, 2001; Burke & Moore 2003; Cole, Field, & Harris, 2004; Ryan, 2001) recommended that to prevent the failure of online learning, online learners need to develop the techniques of self-

discipline, self-motivation, and time management. It appeares that issues of self-discipline, motivation, and time management are important in online learning for Asian students just as for Western students.

According to Tu (2001), most of Asian students were prone to feel isolation when they take online courses. Although online learners can share information, knowledge, and opinions through active interaction and communication with the instructor and their peers easily just as in traditional classroom settings, Asian students reported that both lack of interaction and communications are major issues. This result might be an indication that Asians students felt lack of instructor's guidance. When Asian students needed some help or support from instructors, they might have some experiences where they failed to get enough support. This problems were possibly was related to lack of experience in obtaining feedback because such feedback seeking was discouraged in their home countries. This interpretation would support a relationship between learning and culture.

The participants (N=33, online learning experience group) also reported that lack of prompt feedback is one of the problematic issues. Prompt feedback was a key component of leading the online learning course successfully, especially to Asian students. Culturally Asian students hesitate to ask questions to the instructor. When Asian students ask questions or submit assignments, providing immediate feedback is very crucial in online learning environments (Tallent-Runnels, Thomas, Lan, Cooper, Ahern, & Shaw, 2006). One of the main purposes of feedback is to let the students be aware of what they have learned and what they still need to know to achieve their learning goals. Getting on-time and continuous feedback is very helpful for Asian

students who had online learning experience. It fosters an opportunity to manage their learning in a timely way (Tallent-Runnels, Thomas, Lan, Cooper, Ahern, & Shaw, 2006). According to Gayton and McEwen (2007), feedback must be meaningful, timely, and should be supported by a well-designed rubric when possible.

Too much assignment was also reported as another critical issue. To decrease the pressure of assignments, online learners needed to designate specific times to read their reading assignment, complete written assignments, and post their assignment to the course website. To complete online assignments on times, they needed to develop a time-management strategy with allocation of time to their assignment.

English problems, one way communication, and group projects were reported as critical issues of online learning. For Asian students, language problem was not merely speaking or writing problems, it was related to translation, not equivalent words native language and English, tying skills, and discourse problems. According to Tu (2001):

> "A language barrier remains the major obstacle for Chinese students receiving education in the USA. The presence of language barrier is not as simple as being unfamiliar with the language. When a Chinese students processes a statement translation from English to Chinese; the statement is considered in Chinese and a response is composed; the response is translated into English and subject to the rules of English grammar before it is spoken, or written… …… . Translation of the response into English requires a selection of Chinese words and phrase that could be translated into English. However, certain Chinese words had no English equivalent". (pp. 53-54)

According to researches (Al-Hunaiyyan, Al-Huwail, & Al-Sharhan, 2008; Liu, 2007a; Tu, 2001; Wang, C. Y., 2001; Wang, 2006), Asian students do not willingly participate in group discussion because they are afraid of expressing their opinions,

making mistakes, or giving bad impressions to instructors. Reading and composing messages to online discussion bulletins takes a long time because of language competence. Furthermore, composing a message is very complicated process in Asian students. Beyond language difficulties, typing ability is also problematic. English keyboarding is not familiar to Asian countries keyboarding – Chinese, Korean, or Japanese. Absence of non-verbal cues such as facial expressions, tone of voice, and gestures make Asian students hesitate to participate in online group discussions (Ku, Lee, Pan, Tao, Wang, & Cornell, 2001; Tu, 2001). It can be conclude that cultural issues can influences preference of learning participation in online learning environments.

Regarding benefits of online learning based on personal experience, students responded that saving time, self-paced learning, time management, flexibility, efficiency, accessibility, revisiting the class again until they understand the class, and the ease of accepting other students' opinions were beneficial to them. Asian students generally perceived the same benefits for online learning as those identified by Western students.

Many participants (approximately 40%) made recommendations on ways to improve online learning courses. Increase interaction between instructors and students, make manageable homework and reading assignments, provide clear guidelines of class, timely feedback, quality instruction, clear learning objectives, improvement of communication system, consideration of students' needs, and present ample resources using both internal and external links were recommended. These are similar to recommendations typically mentioned by Western students.

To increase interactions between students and instructors, the role of the instructor is crucial. The instructor can facilitate the online learning interaction by providing

prompt feedback, participating in the interaction, encouraging social interaction, and employing collaborative learning strategies. The instructor also can provide multiple communication channels using e-mail, listserv, chatting, video conferencing, instant messages, discussion board, or the learning community.

The online learning instructor also needs to provide explicit learning goals, clearly stated learning outcomes, requirements, and assessment in advance before the class starts (McLoughlin, 1999, 2002). To decrease the pressure of assignments, the instructor can offer flexible learning objectives, various modes of delivery, and assessments using learning contracts between instructor and students (McLoughlin, 1999). The instructor may offer negotiable learning tasks to students. For quality instruction, the instructor needs to organize the class carefully and provide scaffolding and support systems for students. Prompt feedback provides for the opportunities of the student's progress of learning and enhances the motivation. To share abundant learning resources, the instructor can offer internal or external support groups. Internally, students can share their experiences, problems, and learning resources with each other, externally, students can receive some support from expert or outside communities (McLoughlin & Oliver, 1999). Lastly the instructor needs to take into account the learner's needs. Some students might take online courses for promotion, some might need to complete their credit courses, and some might be taking the class for self-improvement. The instructor needs to be aware of the learner's expectations and needs. Based on the learner's need, the instructor can offer different learning goals, methods, and evaluation processes.

Recommendations for Practice

Culture and learning are interwoven and inseparable. Each individual perceives, processes, and organizes information in different ways. As a rule, preferred information perception, process, and organization are influenced by cultural backgrounds. Based on learners' cultural backgrounds, learners have their own preferred instructional design and learning preferences.

For instructors, this research provided some implications. First, to design culturally inclusive online learning for Asian students who are studying in higher educational institutions, particular attention must be given to the cultural dimensions and preferred learning styles during instructional design. This research indicated that Asian students showed high mean scores in behavioral learning theory based principles, sharply focused learning objectives, rigid and hierarchical learning processes, didactic learning, strictly controlled by instructor, concrete learning experience, extrinsic motivation, instructor-lead learning, regimented learning, generative learning activity, and cooperative learning. By acknowledging these learning tendencies of Asian students, instructors might have some ideas on how to facilitate the classes, organize the learning materials, and prepare learning activities for Asian students in online learning environments. For example, Asian students preferred strictly instructor controlled learning and were sharply focused on learning objectives. Taking this into consideration, the instructor could lead the online learning courses step-by-step with clearly specified learning objectives. The instructor could also provide detailed assignments and scheduled learning activities.

Second, the instructor needs to take into account Asian student's real problems in online learning environments. The results indicated that Asian students had a lot of difficulties completing their online learning courses. English problems, lack of typing English key board, group discussion with American students, and communication problems were main issues. To resolve these problems, the instructor needs to use an appropriate level of English and express simply and precisely the learning contents for learners. The instructor should use simple sentences and avoid slang, colloquialism, local humor, and local insider examples for Asian students (Bentley, Tinney, & Chia, 2005). When conducting group discussion, Asian students often encountered problems with English typing proficiency, translation between English and their native language, and cultural issues such as saving face, do not criticize in public, loss of thought, and limited response time.

According to Tu (2001), most Asian students hesitate to participate in group discussion. Culturally they are not used to sharing their opinions with instructor and peers. Asian students are very much concerned with face-saving in the online discussion. They are afraid of making mistakes and expressing wrong opinions. English typing is not familiar with Asian social presences. Online group discussion requires rapid English typing skills. In addition, with limited time to read other responses and by the time they post their messages the topic has changed. These kinds of experiences cause discomfort and uneasiness. Tu (2001) reported that oftentimes, other students ignore Asians student's messages because the meaning is not clear or context does not fit the subjects. Communication problems come from absence of non-verbal cues such as facial expressions, voice of tones, and gestures (Tu, 2001). When Asian students communicate

with the instructor or peers, they mainly use indirect and formal patterns. In online communication, US students often communicate with informal and direct ways with instructor or peers, which cause a wrong perception of disrespect or rudeness to instructors for Asian students. The differences of communication modes are one of the critical issues in online learning.

Third, to enhance of the completion of online learning, the instructor needed to provide clearly stated learning objectives, requirements, and evaluation methods in advance. Culturally, Asian students preferred clear learning objectives and processes.

Fourth, a manageable assignment was one of the critical issues. To decrease the pressure of assignments, the instructor needs to offer flexible learning goals, provide diverse learning methods, and various assessments using learning contracts. For example, Asian students take long time to read their textbook or other materials because of language problems. Besides, Asian students grew up different learning environment. Therefore, writing critical papers or doing assignments are more take time compared to English native speaker. If the instructor give various learning objectives or assignments using learning contracts, it might be helpful to Asian students. The instructor also could negotiate learning tasks with learners (McLoughlin, 1999).

Fifth, to increase interaction and communication, the instructor may provide scaffolding and support using groups within classes or outside communities (McLoughlin, 1999, 2002).

Recommendations for Further Research

Henderson's multiple cultural model has several benefits for measuring diverse dimensions. First, Henderson's multiple cultural model projected the importance of cultural sensitivity and the inclusion of epistemological, cognitive and philosophical paradigms for minority and marginalized groups. Henderson's model provided the theoretical framework for instructional design. When an instructional designer develops interactive multimedia instruction, the instructor takes into account of combination of instructivism, constructivism, behavioral and cognitive theories effectively for a multiple cultural contextuality. Henderson's model does not provide the information that one scale is better and worse or right and wrong. Second, Henderson's model measures not only educational paradigms – epistemology, philosophy, and underlying learning theory- but also instructional sequence, learner control, motivation, and cultural integration. Henderson's model offers diverse dimensions to enhance learning equity for diverse learners. Third, Henderson's model is an appropriate tool to model the relation of cultural dimensions. This model provides the inclusion of multiple cultural ways of learning and teaching in the global age.

Although, Henderson's multiple cultural model has several strong advantages, the researcher would like to recommend carefully some suggestions. Several dimensions of Henderson's model are hard to clearly distinguish from the other dimensions. For example, it is hard to distinguish between epistemology and underlying philosophy. The instructional sequence dimension and the program flexibility dimension are also hard to distinguish. Dimensions between accommodation of individual differences and learner

control boundaries are blurred. The researcher would like to suggest consolidation of the model to make it simpler and more intuitive.

The second recommendation is increasing the sample size for further study. The current study had a limited sample size. Due to the small number of participants the survey could not provide more significant statistical support for strong conclusions to be drawn. Increasing the sample size would be a desirable to provide more significant results for further study.

The third recommendation is expanding the target population such as South Asian countries, Middle Eastern, Indian, Pacific Islanders, and Hispanic cultures as well.

Fourth, a reexamination of the instrument used in this study is recommended. Although the instrument was tested several ways for validity and reliability with American students who were studying education and with Asian student groups as well, the actual survey results were often inconsistent. Specifically, although Henderson's model assumes that cultural preferences fall on dimensions that range between bipolar extremes, the survey results indicated that students simultaneously preferred elements at both extremes of most of the dimensions. To measure the learning preferences accurately, re-testing and re-examining of the instrument are recommended by employing several different cultural groups with pilot studies and larger sample sizes.

Finally, many of the findings of this study support principles that represent good teaching practice in general. It is unknown precisely how these practices may related specifically to Asian students and their learning preferences profiles as identified in this study. This may provide fertile ground for further research.

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APPENDICES

APPENDIX A

QUESTIONNAIRE WEBSITE PAGES

Oklahoma State University
College of Education
School of Teaching & Curriculum Leadership

Cultural Dimensions and Online Learning Preferences of Asian Students at Oklahoma State University in the United States

Informed Consent

This research project is being conducted by Eun Sook (Esther) Morris, a Ph.D candidate at Oklahoma State University, to study cultural characteristics and online learning preferences of Asian students at Oklahoma State University in the United States. The main purpose of this research is to identify Asian students' online learning preferences and personal problems and benefits in online learning classroom settings. You will answer several questions about gender, age, nation of origin, number of online learning courses taken, level of technology skills, academic major, and graduate or undergraduate status. To measure online learning preference, you will rate numerous items on 5-point scales. To identify personal experience of online learning, you will answer questions about problematic issues and online learning benefits. You will also have opportunities to give comments and suggestions for improvement of online learning. This research will benefit both students and instructors, by helping to understand how to develop, implement, organize, and evaluate online learning courses for Asian students at Oklahoma State University. It is very important that you realize that:

1. Your participation in this study is voluntary and completely anonymous.
2. You will not be penalized in any way if you choose not to participate
3. Your participation will take approximately 20 minutes of your time.
4. You will answer 7 short demographic questions, 60 questions about online learning preferences, and 3 open-ended short questions.
5. It is not anticipated that you will suffer any risks of discomfort or inconvenience from this participation.
6. No incentives will be provided for participation in this study.

You understand and agree to the following conditions regarding the safeguarding of your privacy and identity as a participant in this research:

1. Information you provide will be anonymous and treated with complete confidentiality.
2. Information you provide will be secured at all times by the Principal Investigator, who is a student at Oklahoma State University. All documents will be secured in a locked cabinet until they have been entered into a statistical database and then the documents will be shredded. Only the computer database information will be retained for a period of three years by the Principal Investigator. After this time the database records will be destroyed.
3. The data from this research will be used solely for research reporting and improved understanding of learning needs and training delivery.
4. Any data from this research used in presentation and publication of professional literature and reports will be anonymous and reported only in aggregated form or in codes. No reference to your name or personal identity will be made at any time.
5. There are no known risks associated with participating with this research beyond those encountered in daily life.

If you have any questions about the administration of the survey, please contact either Eun Sook (Esther) Morris, by phone at 832-296-7664, or by e-mail at eun.morris@okstate.edu, or her academic advisor at OSU, Dr. Lynna Ausburn, at 405-744-8322 or lynna.ausburn@okstate.edu.

If you have questions about the research and your rights as a research volunteer you may contact Dr. Shelia Kennison, IRB chair, 219 Cordell North, Stillwater, OK 74078, (405) 744-1676 or irb@okstate.edu.

Your consent to participate will be indicated by clicking on the "**Agree to Participate**" button below. If you do not wish to participate you may click on the "**Decline to Participate**" button without consequence. By clicking on the "**Agree to Participate**" link, this will serve as informed consent and electronic signature for participation in this study.

Agree to Participate | Decline to Participate

Cultural Dimensions and Online Learning Preferences
of Asian Students at Oklahoma State University in the United States

Demographics			
What is your gender?			
○ Male	○ Female		
What is your age?			
What is your nation of origin?			
○ China (People's Republic of China)	○ Japan	○ Korea	○ Taiwan
How many online learning courses have you taken?			
○ None	○ 1 -3	○ 4-6	○ More than 6
How would you rate your level of technology skills?			
○ **Novice** (I know how to do basic functions on the Internet, but I am not skillful			
○ **Fairly skilled** (I know how to handle and mange most software and hardware)			
○ **Power user** (I can manage advanced software and hardware components)			
What is your major?			
What level of degree program are you pursuing?			
○ Bachelor degree	○ Master's degree	○ Doctoral degree	

Online Learning Preference of Asian Students

The following statements are asking you about your online learning preferences. There are no right or wrong answers. Please indicate the degree to which they are true of you.

Knowledge Acquisition and Educational Philosophy

When I take online learning courses, ...

	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I prefer to pursue theoretical knowledge	○	○	○	○	○
I prefer to pursue knowledge for its own sake	○	○	○	○	○
I prefer to obtain practical knowledge	○	○	○	○	○
I prefer to acquire factual knowledge	○	○	○	○	○
I prefer to listen to lectures	○	○	○	○	○
I prefer that the instructor leads the class	○	○	○	○	○
I believe that learning is derived from one's individual and social experience	○	○	○	○	○
I prefer to learn through real life experiences	○	○	○	○	○

Learning Theory and Goal Orientation

When I take online learning courses, ...

	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I prefer that instructor specify the desired learning performance in advance	○	○	○	○	○
I value learning outcomes	○	○	○	○	○
I value the learning process	○	○	○	○	○
I value reorganizing my thoughts rather than changing my external behavior	○	○	○	○	○
I prefer clearly stated learning objectives	○	○	○	○	○
I prefer predetermined learning goals	○	○	○	○	○
I prefer flexible learning goals	○	○	○	○	○
I prefer broad and open-ended learning goals	○	○	○	○	○

Sequencing of Instruction and Valuing of Experience					
When I take online learning courses, ...					
	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I prefer to learn step-by-step	○	○	○	○	○
I prefer to learn in detail	○	○	○	○	○
I prefer to learn in an unstructured way	○	○	○	○	○
I prefer to learn general principles first and specific knowledge later	○	○	○	○	○
I prefer to learn from textbooks rather than other resources	○	○	○	○	○
I prefer to learn from theory rather than experience	○	○	○	○	○
I prefer to learn by doing	○	○	○	○	○
I prefer to learn through practical examples	○	○	○	○	○

Instructor's Roles and Errorless Learning					
When I take online learning courses, ...					
	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I believe the role of the instructor is providing knowledge	○	○	○	○	○
I believe an instructor should be an expert on the subject matter	○	○	○	○	○
I believe the role of the instructor is for guiding the learning	○	○	○	○	○
I believe the role of the instructor is as a mentor	○	○	○	○	○
I prefer to repeat my learning until I can generate correct answers	○	○	○	○	○
I do not want to make any mistakes in my tests	○	○	○	○	○
I believe making a mistake is just a part of the learning process	○	○	○	○	○
I believe that I can learn through my mistakes	○	○	○	○	○

Motivation and Program Flexibility					
When I take online learning courses, ...					
	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I value saving time and money	○	○	○	○	○
I value earning school credits more than I value enjoying the class	○	○	○	○	○
I enjoy a variety of learning activities such as threaded discussions or other collaborative activities with students and the instructor.	○	○	○	○	○
I enjoy online learning itself	○	○	○	○	○
I prefer well-defined learning projects	○	○	○	○	○
I prefer fixed learning schedules	○	○	○	○	○
I prefer self-paced learning	○	○	○	○	○
I prefer flexible learning schedules	○	○	○	○	○

Organizing Courses and Directing Learning					
When I take online learning courses, ...					
	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I prefer well-organized learning courses	○	○	○	○	○
I prefer a well-planned learning curriculum	○	○	○	○	○
I prefer to use a variety of learning materials	○	○	○	○	○
I prefer to have access to a wide array of supplementary learning materials	○	○	○	○	○
I prefer that the instructor directs my learning	○	○	○	○	○
I prefer that the instructor gives me a deadline for my assignments	○	○	○	○	○
I prefer to manage my own learning	○	○	○	○	○
I prefer to assess my own learning	○	○	○	○	○

Learner Activity and Group Learning					
When I take online learning courses, ...					
	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I prefer that the instructor controls my entire learning process	○	○	○	○	○
I prefer to have class learning tasks rigidly specified in advance on the class syllabus	○	○	○	○	○
I prefer to be actively involved in my own learning	○	○	○	○	○
I prefer to initiate my own learning	○	○	○	○	○
I prefer to work by myself without discussion with my classmates	○	○	○	○	○
I prefer individual learning	○	○	○	○	○
I prefer to perform class projects in small groups	○	○	○	○	○
I prefer to cooperate to my classmates	○	○	○	○	○

Cultural Sensitivity					
When I take online learning courses, ...					
	Strongly Disagree	Disagree	No Preference	Agree	Strongly Agree
I believe learners' cultural backgrounds really affect learning achievement	○	○	○	○	○
I am interested in my classmates' cultural backgrounds	○	○	○	○	○
I am ready to accept cultural differences of both the instructors and classmates	○	○	○	○	○
I am ready to listen attentively others' opinions regardless their cultural backgrounds	○	○	○	○	○

Comments of Online Learning
What is the most difficult problem you personally experience when you take an online course?
What is the best benefit you personally experience when you take an online course?
In order to improve online courses, what do you want to recommend?

APPENDIX B

HENDERSON'S MULTIPLE CULTURAL MODEL MATIRX OF QUESTIONNAIRE ITEMS

APPENDIX B

HENDERSON'S MULTIPLE CULTURAL MODEL
MATIRX OF QUESTIONNAIRE ITEMS

	Dimensions		**Question items**
Knowledge Acquisition and Educational Philosophy			
When I take online courses,			
D1	Epistemology	Objectivism	1. I prefer to pursue theoretical knowledge 2 I prefer to pursue knowledge for its own sake
		Constructivism	3. I prefer to obtain practical knowledge 4. I prefer to acquire factual knowledge
D2	Pedagogical Philosophy	Instructivism	5. I prefer to listen to lectures 6. I prefer that the instructor leads the class
		Constructivism	7. I believe that learning is derived from one's individual and social experience 8. I prefer to learn through real life experiences
Learning Theory and Goal Orientation			
When I take online courses,			
D3	Underlying Psychology	Behavioral theory	9. I prefer that instructor specify the desired learning performance in advance 10. I value learning outcomes
		Cognitive theory	11. I value the learning process 12. I value reorganizing my thoughts rather than changing my external behavior
D4	Goal Orientation	Sharply focused	13. I prefer clearly stated learning objectives 14. I prefer predetermined learning goals
		Unfocused	15. I prefer flexible learning goals 16. I prefer broad and open-ended learning goals
Sequencing of Instruction and Valuing of Experiences			
When I take online courses,			
D5	Instructional Sequence	Reductionism	17. I prefer to learn step-by-step 18. I prefer to learn in detail
		Constructivism	19. I prefer to learn in an unstructured way 20. I prefer to learn general principles first and specific knowledge later
D6	Experiential Value	Abstract	21. I prefer to learn from textbooks rather than other resources 22. I prefer to learn from theory rather than experience
		Concrete	23. I prefer to learn by doing 24 I prefer to learn through practical examples

APPENDIX B continued

Instructor's Role and Errorless Learning			
When I take online courses,			
D7	Instructor's Role	Didactic	25. I believe the role of the instructor is providing knowledge 26. I believe an instructor should be an expert on the subject matter
		Facilitative	27. I believe the role of the instructor is for guiding the learning 28. I believe the role of the instructor is as a mentor
D8	Value of errors	Errorless learning	29. I prefer to repeat my learning until I can generate correct answers 30. I do not want to make any mistakes in my tests
		Learning from experience	31. I believe making a mistake is just a part of the learning process 32. I believe that I can learn through my mistakes
Motivation and Program Flexibility			
When I take online courses,			
D9	Motivation	Extrinsic	33. I value saving time and money 34. I value earning school credits more than I value enjoying the class
		Intrinsic	35. I enjoy a variety of learning activities such as threaded discussions or other collaborative activities with students and the instructor. 36. I enjoy online learning itself
D10	Program flexibility	Teacher proof	37. prefer well-defined learning projects 38. I prefer fixed learning schedules
		Easily modifiable	39. I prefer self-paced learning 40. I prefer flexible learning schedules
Organizing Courses and Directing Learning			
When I take online courses,			
D11	Accommodation of individual difference	Non-existent	41. I prefer well-organized learning courses 42. I prefer a well-planned learning curriculum
		Multifaceted	43. I prefer to use a variety of learning materials 44. I prefer to have access to a wide array of supplementary learning materials
D12	Leaner control	Non-existent	45. I prefer the instructor directs my learning 46. I prefer the instructor gives me the deadline for my assignments
		Unrestricted	47. I prefer to manage my own learning 48. I prefer to assess my own learning

APPENDIX B continued

Learner Activity and Group Learning			
When I take online courses,			
D13	User activity	Mathemagenic	49. I prefer that the instructor controls my entire learning process 50. I prefer to have class learning tasks rigidly specified in advance on the class syllabus
		Generative	51. I prefer to be actively involved in my own learning 52. I prefer to initiate my own learning
D14	Cooperative learning	Unsupported	53. I prefer to work by myself without discussion with my classmates 54. I prefer individual learning
		Integrated	55. I prefer to perform class projects in small groups 56. I prefer to cooperate to my classmates
Cultural Sensitivity			
When I take online courses,			
D15	Cultural sensitivity	Non-existent	57. I believe learners' cultural backgrounds really affect learning achievement 58. I am interested in my classmates' cultural backgrounds
		Integrated	59. I am ready to accept cultural differences of both the instructors and classmates 60. I am ready to listen attentively others' opinions regardless their cultural backgrounds

APPENDIX C

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL DOCUMENTS

Oklahoma State University Institutional Review Board

Date:	Thursday, September 18, 2008
IRB Application No	ED08136
Proposal Title:	Cultural Dimensions and Online Learning Preferences of Asian Students at Oklahoma State University in the United States
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 9/17/2009

Principal Investigator(s):

Eun Sook Morris
25723 Crisp Spring Lane
Spring, TX 77373

Lynna Ausburn
257 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

Invitation letter

Date: September 15, 2008

Eun Sook (Esther) Morris
25723 Crsip Spring Lane
Spring, Texas, 77373

Dear international students:

I am a graduate student pursuing a Ph.D degree in the program of Occupational Education Studies in the College of Education at Oklahoma State University. I am conducting a survey of online learning preferences of Asian students who are studying at Oklahoma State University. The purpose of this research is identifying online learning preferences, online learning personal problems, and benefits of Asian students who are studying at Oklahoma State University.

I know that this is a busy time of year for you, but I hope that you will take just a little time to participate in this brief online survey. The survey takes about 20 minutes to complete.

Your personal participation is completely voluntary. If you do not wish to participate this survey, you may decline at any time. If you agree to participate this survey, please visit the website of http://frontpage.okstate.edu/coe/esthermorris/ . Then click to "Agree to participate". If you do not have access to the Internet, or prefer to answer the questionnaire on paper, you may request a paper survey by sending an e-mail to eun.morris@okstate.edu or calling 832-296-7664.

Your participation is voluntary and will be confidential. Moreover, the results of the survey will be only being reported in a summary format.

Thank you in advance for your participation in this research. If you have any questions about the administration of the survey, please contact either Eun Sook (Esther) Morris, by phone at 832-296-7664, or by e-mail at eun.morris@okstate.edu, or academic advisor at OSU, Dr. Lynna Ausburn, at 405-744-8322 or lynna.ausburn@okstate.edu.

Sincerely,

Esther Morris

Cultural Dimensions and Online Learning Preferences of Asian Students at Oklahoma State University in the United States

Informed Consent

This research project is being conducted by Eun Sook (Esther) Morris, a Ph.D candidate at Oklahoma State University, to study cultural characteristics and online learning preferences of Asian students at Oklahoma State University in the United States. The main purpose of this research is to identify Asian students' online learning preferences and personal problems and benefits in online learning classroom settings. You will answer several questions about gender, age, nation of origin, number of online learning courses taken, level of technology skills, academic major, and graduate or undergraduate status. To measure online learning preference, you will rate numerous items on 5-point scales. To identify personal experience of online learning, you will answer questions about problematic issues and online learning benefits. You will also have opportunities to give comments and suggestions for improvement of online learning. This research will benefit both students and instructors, by helping to understand how to develop, implement, organize, and evaluate online learning courses for Asian students at Oklahoma State University. It is very important that you realize that:

1. Your participation in this study is voluntary and completely anonymous.
2. You will not be penalized in any way if you choose not to participate.
3. Your participation will take approximately 20 minutes of your time.
4. You will answer 7 short demographic questions, 60 questions about online learning preferences, and 3 open-ended short questions.
5. It is not anticipated that you will suffer any risks of discomfort or inconvenience from this participation.
6. No incentives will be provided for participation in this study.

You understand and agree to the following conditions regarding the safeguarding of your privacy and identity as a participant in this research:

1. Information you provide will be anonymous and treated with complete confidentiality.
2. Information you provide will be secured at all times by the Principal Investigator, who is a student at Oklahoma State University. All documents will be secured in a locked cabinet until they have been entered into a statistical database and then the documents will be shredded. Only the computer database information will be retained for a period of three years by the Principal Investigator. After this time the database records will also be destroyed.
3. The data from this research will be used solely for research reporting and improved understanding of learning needs and training delivery.
4. Any data from this research used in presentation and publication of professional literature

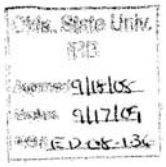
and reports will be anonymous and reported only in aggregated form or in codes. No reference to your name or personal identity will be made at any time.

5. There are no known risks associated with participating with this research beyond those encountered in daily life.

If you have any questions about the administration of the survey, please contact either Eun Sook (Esther) Morris, by phone at 832-296-7664, or by e-mail at eun.morris@okstate.edu, or her academic advisor at OSU, Dr. Lynna Ausburn, at 405-744-8322 or lynna.ausburn@okstate.edu.

If you have questions about the research and your rights as a research volunteer you may contact Dr. Shelia Kennison, IRB chair, 219 Cordell North, Stillwater, OK 74078, (405) 744-1676 or irb@okstate.edu.

Your consent to participate will be indicated by clicking on the "**Agree to Participate**" button below. If you do not wish to participate you may click on the "**Decline to Participate**" button without consequence. By clicking on the "**Agree to Participate**" link, this will serve as informed consent and electronic signature for participation in this study.



APPENDIX D

INVITATION LETTER

Invitation letter

Date: September 15, 2008

Eun Sook (Esther) Morris
25723 Crsip Spring Lane
Spring, Texas, 77373

Dear international students:
I am a graduate student pursuing a Ph.D degree in the program of Occupational Education Studies in the College of Education at Oklahoma State University. I am conducting a survey of online learning preferences of Asian students who are studying at Oklahoma State University. The purpose of this research is identifying online learning preferences, online learning personal problems, and benefits of Asian students who are studying at Oklahoma State University.

I know that this is a busy time of year for you, but I hope that you will take just a little time to participate in this brief online survey. The survey takes about 20 minutes to complete.

Your personal participation is completely voluntary. If you do not wish to participate this survey, you may decline at any time. If you agree to participate this survey, please visit the website of http://frontpage.okstate.edu/coe/esthermorris/ . Then click to "Agree to participate". If you do not have access to the Internet, or prefer to answer the questionnaire on paper, you may request a paper survey by sending an e-mail to eun.morris@okstate.edu or calling 832-296-7664.

Your participation is voluntary and will be confidential. Moreover, the results of the survey will be only being reported in a summary format.

Thank you in advance for your participation in this research. If you have any questions about the administration of the survey, please contact either Eun Sook (Esther) Morris, by phone at 832-296-7664, or by e-mail at eun.morris@okstate.edu, or academic advisor at OSU, Dr. Lynna Ausburn, at 405-744-8322 or lynna.ausburn@okstate.edu.

Sincerely,

Eun Sook (Esther) Morris

APPENDIX E

FOLLOW UP LETTER

Follow up Letter

Date: October 8, 2008

A week ago(October 2, 2008) an online questionnaire was e-mailed to you, asking your online learning preferences, personal experience of online learning about problematic issues, and benefits of online learning to identify online learning preferences of Asian students at Oklahoma State University.
If you have already completed and returned the questionnaire, please accept my thanks. If not, please visit the following link http://frontpage.okstate.edu/coe/esthermorris/ and complete the questionnaire in the as soon as you can. I am very grateful for your help, as your response helps to identify Asian students' online learning preferences, problematic issues, and benefits of online learning at Oklahoma State University.

Sincerely yours,

Eun Sook (Esther) Morris
Principal investigator, 832-296-7664.
E-mail: eun.morris@okstate.edu

VITA

Eun Sook (Esther) Morris

Candidate for the Degree of

Doctor of Philosophy

Dissertation: CULTURAL DIMENSIONS AND ONLINE LEARNING PREFERENCES OF ASIAN STUDENTS AT OKLAHOMA STATE UNIVERSITY IN THE UNITED STATES

Major Field: Education

Biographical:

Personal Data

Education:
Received a Bachelor of Arts degree in Education from Hoysung Women's University, Teagu, Republic of Korea, in February, 1983. Received a Master of Pedagogy degree in Education from Hoysung Women's University, Teagu, Republic of Korea, in February, 1985. Received a Master of Arts degree in Marriage and Family Therapy from Oral Roberts University, Tulsa, Oklahoma in May, 1995. Completed the requirement for the Doctor of Philosophy with a major in Education at Oklahoma State University in May of 2009.

Experience:
CATT (Computer Assisted Transfer Technology) project web designer, Oklahoma State University, Stillwater, Oklahoma (2001-2002).
Localization Engineer, StatSoft, Tulsa, Oklahoma (1999-2001).
Instructor of Early Childhood Education, Kyungju Junior College, Kyungju, South Korea (1985-1988).

Name: Eun Sook (Esther) Morris Date of Degree: May, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: CULTURAL DIMENSIONS AND ONLINE LEARNING PREFERENCES OF ASIAN STUDENTS AT OKLAHOMA STATE UNIVERSITY IN THE UNITED STATES

Pages in Study: 193 Candidate for the Degree of Doctor of Philosophy

Major Field: Education

Scope and Method of Study: The purpose of this study was identifying Asian students' online learning preferences, personal problems, online learning benefits, and personal recommendations for improvement of online learning. The population of this study was the students who came from East Asia countries such as Korea, Japan, China, and Taiwan. This research used an online survey questionnaire. To quantify the demographic profile, forced-choice questions were used. To identify online learning preferences, a five-point Likert type rating scale was used. To discover online learning personal problems, benefits, and recommendations for improvements, open-ended questions were used. Descriptive statistics and thematic analysis were used to analyze the collected data. Asian students' online learning preference were measured in accordance with Henderson's multiple cultural model. A new survey instrument was developed. Correlation coefficient analysis and exploratory factor analysis were used to establish validity and reliability of the instrument. A pilot study also conducted.

Findings and Conclusions: Among 82 respondents, 34 students had online learning experiences. The results indicate that Asian students prefer behavioral learning theory-based instruction, learning that is sharply focused on learning objectives, that is rigid with hierarchical instruction. Also they prefer direct instruction, extrinsic motivation, instructor-proof instruction, strictly controlled learning, and cooperative learning. These learning preferences are related to the Asian culture. Preference of behavioral learning theory-based instruction is related to rigid entrance examination procedures common in most Asian countries. These findings are used to generate a set of recommendations for instructors of Asian students in online learning environments in the United States. The basic recommendations are that instructors should be aware of the learning preferences of Asian students who tend to work well in instructor controlled learning environments with sharply focused learning objectives. Also, instructors should be aware of Asian students culturally-based problems in online learning situations, principally communications problems stemming from unfamiliarity with non-standard English and Western cultural characteristics.

ADVISER'S APPROVAL: Dr. Lynna Ausburn